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Coordinated Project on Generation of GIS-based Socioeconomic Data

GIS

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তারিখ: ৩০/০৮/২০০০ ইং

নিবন্ধি চেয়ারম্যান
বি.এ.আর.সি
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দৃষ্টি আকর্ষণ : ডঃ মোঃ নূরুল আলম, সদস্য পরিচালক,
পরিকল্পনা ও মূল্যায়ন বিভাগ, বি.এ.আর.সি, ঢাকা।

বিষয় : চুক্তিবদ্ধ কারিগরি প্রকল্প "Generation of Geographic Information System
Based Socio-economic Data" এর Principal Investigator ও Authorized
representative প্রসঙ্গে

উল্লিখিত প্রকল্পের Principal Investigator ডঃ মোঃ আব্দুল জব্বার, বি.এস.ও, কৃষি অর্থনীতি
বিভাগ, বাংলাদেশ ধান গবেষণা ইনস্টিটিউট, ব্রি- অংশের গবেষণা কাজ পরিচালনা করতেন এবং এই প্রকল্প
সংক্রান্ত কাজে Authorized representative হিসাবে দায়িত্ব পালন করতেন।

অতএব, ডঃ মোঃ আব্দুল জব্বারকে উল্লিখিত প্রকল্পের Authorized representative হিসাবে গণ্য
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(ডঃ এম. এ. হামিদ মিয়া)
সদস্য পরিচালক

০/৫

Bangladesh Agricultural Research Council
Agricultural Research Management Project (ARMP) IDA Credit 2815-BD.

CONTRACT RESEARCH PROGRAMME

Summary of Achievements and Transferable Technologies of Completed Contract Research Projects

A. Project Information

- i) Title : Coordinated Project on Generation of GIS-based Socioeconomic Data.
- ii) PI/Coordinator with designation: Dr. M.A. Jabber
Principal Scientific Officer
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BRRI, Gazipur.
- iii) Implementing Agency(ies): Agril. Econ. Division, BRRI
- iv) Total Approved cost : Tk. 9,05,000.00
Total Expenditure : Tk. 8,27,949.00
- v) Duration (Actual) : 12 Months (From 1st March' 2000 to 31st March' 2001)

Page No.

- vi) Major Objective(s) : **3**
 - a)
 - b)
 - c)
 - d)

B. Major Achievements (Maximum 2(Two) pages)..... **36**

- i) Findings: **7**
(Please give statements and specific achievements)
- ii) Recommendations : **14**

C. Transferable Technology (ies) (Maximum 2 (Two) Page) **38**

D. Comments of the Technical Division/Section of BARC:

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TABLE OF CONTENTS

	Page #
ACKNOWLEDGEMENTS	iii
List of Tables	v
List of Figures	vi
ABSTRACT	1
I INTRODUCTION	1
Importance and Significance of Research Work	1
Literature Review	2
Objective of the Study	3
II METHODOLOGY	4
Selection of Sample Upazillas	4
Preparation of Questionnaire	4
Data Collection	4
Period of Data collection	6
Limitations of Data	6
III. RESULTS AND DISCUSSIONS	7
Socio-economic and demographic profile	7
Age and population	7
Educational institution and literacy	7
Household classification by pattern of occupation	7
Household classification by farm category	8
Agricultural labour force situation	8
Agriculture	8
Land use intensity	8
Irrigation equipments	9
Yield of different crops	9
Benefit cost ratio of different crops	9
Womens participation in agriculture	9
Non- crop Agricultural enterprises	10
Small industries and factories	10
Post harvest processing units	10
Marketing	11
Number of markets and mode of transportation	11
Market linkage with road and communication facilities	11
Number of institution involved in rural development	11
Economic condition of the farmers	12
IV. SUMMARY AND CONCLUSION	13
Recommendation and suggestions	14
V. REFFERENCES	15
VI. APPENDICES	36
Appendix -A Executive Summery of the Project	36
Appendix -B Transferable Technologies	38
Appendix -C Code sheet	39
Appendix -D General Questionnaire	51
Appendix -E Cost & Return Questionnaire	63

LIST OF TABLES

	Page #
Table 1. List of Upazillas selected for BRRI Team.	16
Table 2. Percentage distribution of population by age group under different regions.	17
Table 3. Distribution of the households by pattern of occupation in the selected Upazillas, 1996.	17
Table 4. Distribution of the sample households according to farming category in the selected Upazillas, 1996.	18
Table 5. Average number of irrigation equipments available in the study Upazillas, 1996.	18
Table 6. Average yield of paddy (t/ha) in the selected site during 1996-97 to 1998-99.	19
Table 7. Average yield (t/ha) of different agricultural crops in the selected Upazillas from 1996-97 to 1998-99.	20
Table 8. Benefit- Cost Ratio of different crops of Bangladesh	21
Table 9. Distribution of non-crop enterprises in the selected Upazillas by type of enterprises, 1996.	22
Table 10. Available road facilities in the study Upazillas according to type of roads, 1996.	22
Table 11. Distribution of commercial banks available in the selected Upazillas, 1996.	23
Table 12. Average number of rural cooperative society under different organizations, 1996.	23
Table 13. Dynamics of farm household under different regions in Bangladesh, 1984-1996.	24

Abstract

There are three rice crops in Bangladesh - Aus, Aman and Boro. The Aus and Aman crops are grown in the monsoon and are mainly rainfed, while the Boro crop is largely irrigated. Aus is the most common rice crop but has been declining in area of interest.

LIST OF FIGURES

		Page #
Figure 1.	Distribution of average educational institutions in the selected Upazilla.	25
Figure 2.	Percentage in the ratio of gender differences in the study Upazilla, 1991-96.	26
Figure 3.	Distribution of labour force according to job category, 1996.	27
Figure 4.	Average land use intensity of the selected Upazilla, 1996.	28
Figure 5.	Womens participation in agricultural activities by type of operation in the selected Upazilla	29
Figure 6.	Percentage of small industries and factory available in each Upazilla	30
Figure 7.	Percentage of post-harvest processing unit in each Upazilla	31
Figure 8.	Average number of market in the selected Upazillas according to available facility	32
Figure 9.	Distribution of transport facilities available in the selected Upazilla	33
Figure 10.	Distribution of road linkages with the markets in selected Upazilla by type of infrastructure	34
Figure 11.	Distribution of NGOs working in each Upazilla	35

Importance and Significance of Research Work

The Geographic Information System (GIS) is specially designed for geographical processing of spatial information and data. In the GIS database environment

system (DBMS) is primarily used for managing and interpreting these data. It is also used to store data, data is more meaningful when presented in a well-organized manner.

The database is changing location and data is more and more being stored in a

centralized manner. In order to avoid overlapping and sharing data, the process must

be an important step of systematically storing the spatial information that is

Bangladesh land use and crop planning are very crucial for overall development of

agricultural planning in Bangladesh.

Abstract

There are three rice crops in Bangladesh - Aus, Aman and Boro. The Aus and Aman crops are grown in the monsoon and are mainly rainfed, while the Boro crop is largely irrigated. Aman is the most important crop, but Boro has shown the fastest rate of growth in recent decades closely related to the adoption of modern varieties (MVs) and spread of irrigation. Boro paddy is more profitable than T Aman and Aus paddy crops.

The number of farm households is shifting downward day by day because the decreasing number of medium and large farmers. The overall consequence seems to be positive in terms of economic development.

I. Introduction

Importance and Significance of Research Work

The Geographical Information System (GIS) is specially designed for simultaneous processing of socio-economic and other related data. In the GIS database management system (DBMB) is generally used for managing and interpreting those data. It is important to note that, due to some unavoidable reasons particularly social as well physical reasons, the database is changing overtime and those changes are often not being taken into consideration. However, in order to avoid overlapping and discrepancies the present study is an important attempt of systematically storing the baseline socio-economic data. In Bangladesh land use and crop planning are very crucial for overall improvement of agricultural planning in Bangladesh.

The AEZ database now under the process of digitization is very helpful as the primary source of bio-physical data. But for more rigorous land use and crop suitability modeling exercise, we need very good quality socio-economic data sets, which will be incorporated into the AEZ- GIS database.

The GIS project is using highly technical and sophisticated latest computer programme. This project would be able to contribute to building up database information relating to different aspects of economic analysis. This will ultimately help the planners as well as the researchers to update their database and knowledge for future use. The currently available information through AEZ is mainly specific to land and crops. The addition of socio-economic parameters to AEZ database will further strengthen the agricultural crop suitability planning.

A. Literature Review:

The socio-economic indicators at Upazilla level are generally collected, compiled and disseminated by Bangladesh Bureau of Statistics (BBS) through conducting census of population, housing and agriculture. The first agricultural census was conducted in 1960 on sample basis and the results were estimated and published at the national and greater district levels. The second agricultural census was conducted in 1977. This time the enumeration was done on sample basis and the estimates were made at the national level.

The third agricultural census was undertaken in 1983-84 on complete enumeration basis and the results were published at the community level. This census report covered only some basic statistics (population, farm size, land holding, cropped area, cropping pattern etc.) on Upazilla basis but most of other relevant socio-economic data are either missing or too old. Some data can, however, be used. The Farming System Research (FSR) data though useful, they cover only limited socio-economic aspects representing only a segment of population/farm. The Upazilla Cereal Technology Transfer and Identification (TCTTI)

reports like-wise cover only isolated and partial information/data related to sample areas/farmers . Some of the information contained in TCTTI reports may be used wherever relevant. Full information on the use of inputs are not available in these reports. The Year Book of Agricultural Statistics, by and large, contain mostly region/district-based data. Upazilla-wise data are hardly available for seeds, pesticides and fertilizers. Whereas to give a comprehensive coverage of each Upazilla, as a focal point, it is considered essential to build a Upazilla-based inventory of the relevant socio-economic indicators exerting influence on farming decisions in the respective Upazilla.

While a large and varied set of data at the Upazilla level is useful it is unlikely that it will be readily available. Some of the information required are available only at the national level but others are available at the district level. Upazilla based data are available on a piecemeal basis in various places and documents in a rudimentary stage. The Upazilla-based Agricultural Census, which may provide some of the necessary information, it contains figures for 1983-84 only and cannot, therefore, be considered to be sufficiently up-to-date. The fourth Agricultural Census, following the guidelines of FAO, was conducted on complete enumeration basis in January 1996. The broad items that were covered in this census include: land tenure, land use and fragmentation, crop acreage, irrigation, fertilizer and pesticides, equipments, agricultural population and labour, employment in agriculture, credit etc.

B. Objectives of Proposed Work

- (i) To collect socioeconomic data from the secondary as well as primary sources at the Upazilla level;
- (ii) To analyse the data for inclusion in the GIS data base and
- (iii) To derive policy guideline from the above.

II. Methodology

Selection of Upazillas

The GIS Project personnel selected about 201 Upazillas from different districts of Bangladesh. Fifty Upazillas were allocated to each of the four teams BAU Team I, BAU Team II, BRRI Team and DU Team for collection of data. For convenience 50 Upazillas of 19 districts were allocated for BRRI Team shown in Table -1.

Preparation of Interview Schedule

The survey schedule was also prepared by the concerned GIS project authority. The schedule contains about 16 major areas/aspects and each of the areas/aspects includes two to seven questions. The GIS project authority also indicated the sources of data for each of the questions.

Data collection

There were mainly two broad sources of data collection by using this common survey schedule. One of the main sources of data was BBS Census of Agriculture-1996. And another was the interview with the different officials at Upazilla level and various knowledgeable persons particularly the farmers in different areas. But unfortunately, BBS Census of Agriculture Report 1996 was not available in time. Recently only a few reports for some districts are available in the market. Considering the non-availability of BBS Census of Agriculture-1996, a decision to estimate the required data on the basis of previous BBS documents and by using results of interviews with the knowledgeable persons at the Upazilla level was taken in a joint meeting with National Project Coordinator of GIS project, Member-Director (AERS), concerned PSO, Socio-economic

Consultant of GIS project and all the PIs & Co-PIs of the Coordinated project on Generation of GIS-based Socioeconomic Data.

Data were collected from the records of the various offices such as Upazilla Agricultural Office, Upazilla Livestock Office, LGED, Upazilla Education Office, BRDB Office (including PDBF), Project Implementation Office, Bank branches at Upazilla, and Divisional Forest Office, Regional and head offices of Bangladesh Krishi Bank, Sonali Bank, Janata Bank and Agrani Bank. In addition to official records long discussions were made individually with UAO, BS, farmers, ULO, UFO, BADC Office, DD Office, Social Welfare Office, Food Office, ADAB Office, UNO Office, Statistical Office, NGOs workers. Moreover, owners of different industries/factories, processing units and traders were also consulted for getting relevant and accurate data. Highly trained agricultural economics graduates and the PI and Co-PI were involved in data collection.

In the process of data collection all the PIs and Co-PIs of Four Teams met 15 times at different places i.e. BARC, BAU, BRRI, and DU to discuss the problems faced in data collection, monitor the progress of work and to find out solutions to complete the task as per scheduled time. In many of the occasions the GIS-project personnel were also present.

After collecting data, a codebook was prepared to facilitate data entry in computer (Excel program). Data were edited and cleaned to avoid inconsistency. In some cases several revisits were made to verify and complete the data set. In the mid-way data were also supplied to the GIS project authority for their comments. Their comments were duly considered before finalization of the data set for GIS use.

Period of data collection: February 2000 to March 2001.

Limitations of data

In fact there is no system of keeping record on socioeconomic information at the Upazilla level. Generally, some records on socioeconomic data are kept by the Agriculture Office, Livestock Office, Education Office, LGED, Cooperative Office, BRDB (including PDBF), PDB, and REB at Upazilla level. But none was there to record information on many issues such as wage rate of agricultural labour, number of small industries/factories, processing units, cold storage facilities, market related information, requirement and availability of feed, irrigation charges, hiring charges of agricultural equipment, number of non-crop agricultural enterprises, fisheries and forest production, product prices of non-crop agricultural enterprises. In absence of recorded data we had to depend on the concerned officers and knowledgeable persons for obtaining the required data. Therefore, these sorts of generated data were collected on the basis of experts' guesswork. So it is most likely that responses would vary over the time and also from person to person. Another limitation is that the data in most of the cases refer to the average value. Data on products and their prices are not clearly grade specific. Despite these limitations the generated data are expected to be reliable and reasonable.

III. RESULTS AND DISCUSSION:

Socio-economic and demographic profile:

Age and population

Table: 2 shows the percentage distribution of population by age category at different regions of Bangladesh. It was found that the percentage distribution of 15 years + population was high in all the locations which was 56 percent.

Educational institution and literacy:

The average number of primary school of the fifty Upazillas was about 140 which was 69% of the total educational institution. The average number of High school, Madrasha and College was 34, 22 and 6 and their corresponding percentage was 17, 11 and 3 respectively. Apparently it seems that the number of primary and High school is enough which is a good indicator for providing education (Fig. 1.).

The literacy percentage of male was increased from 34.77 in 1991 to 49.71 in 1996. This indicates an increase of the literacy rate 14% for male. In the case of female this rate of increase was only 8.97 %. From the above discussion it can be said that the literacy rate for male was higher than female. Now the Government already has taken some measure to increase the literacy percentage for female. Therefore, we hope that the literacy rate for female would be increased in the near future (Fig.2).

Household classification by pattern of occupation:

Agriculture is the main occupation of the 50 surveyed Upazillas which covers 67.29% of the total population. The second occupation is agril. wage labour which covers 13.01%.

Besides there were 11 type of household occupations available in the selected Upazillas which indicates that there is a scope for economic growth (Table.3)

Household classification by farm category

The average percentage of farm household was 67. Of them the percentage of the household for Tenant, Marginal, Small, Medium and Large were 9.33, 11.61, 36.33, 8.05 and 1.20 respectively. On the other hand the percentage of non-farm household was 24.14. From the above discussion it can be said number of agricultural farm household is high compared to non-farm household which indicates majority population depend on agriculture (Table.4)

Agril. labour force situation

From figure-3 it can be found that 71% of the total labour force was available in rural area especially in agricultural sector. It seems that total agricultural labour was surplus in the 50 Upazillas.

Agriculture

Land use intensity

Figure -4 shows the land utilization pattern of 50 Upazillas. It was found that the percentage of double-cropped area was the highest (57%). The percentage of single cropped area is the lowest (14%). Therefore, there is a scope for further increase in cropped area with the increase of irrigation facility.

Irrigation equipments

Table 5 shows the average number of irrigation equipment operated by diesel and electricity and most of the equipments was diesel operated engine. If electricity supply is ensured there is a probably of increasing irrigated area through installation of DTW.

Yield of different crops

Average paddy yield data of 50 Upazillas in 4 regions is closed to national paddy yield (Table 6) irrespective of season from 1996-97 to 1998-99. Table 7 shows the average yield of different crops of the 50 Upazillas. It can be said that the average yield of wheat was 1.92 t/ha, 1.99 t/ha and 1.93 t/ha for the year 1997, 1998 and 1999 which was less than the national average yield (2.16 t/ha).

Benefit cost ratios of different crops

Results of benefit cost ratio of different crops of Bangladesh provided in (Table 8). However, Boro rice crop is more profitable than T. Aman and Aus paddy crops.

Womens participation in agriculture

Figure 5 shows the women participation in different activities of agriculture. It is observed that the participation of the women in different activities was very low except rice par-boiling and milling (10.30%).

In Bangladesh, the percentage of women to total population was 48%. But less number of women are engaged in agricultural activities which indicates that women in Bangladesh have more scope to engage in agricultural activities.

Non crop agricultural enterprises

The average number of commercial poultry farms was the highest (56.96%) of 50 Upazillas. This means that there is an increase of the alternative employment opportunity as well as income (Table 9).

Small industry and factories

Figure 6 shows the percentage of small industries and factories available in the 50 Upazillas. It was found that the percentage of handloom and weaving industries were the highest (33.07%). The second highest number was the saw mill (21.60%). The other industries were Brick field, workshop with Leather machine, Ice cream factory and Bread and Biscuit factory and their corresponding percentage was 17.06, 16.76, 1.11 and 10.40 respectively. The highest percentage of handloom industries indicates that there are economic activities in the 50 Upazillas, which expedite the economic growth.

Post harvest processing units

Average percentage of post-harvest processing units found dominant which was 65.80 by rice mills followed by flour mills (16.54%). Other mills which were very few also found in the study Upazilla. These processing units should be developed for the resource poor farmers by local authority through micro credit system (Fig. 7).

Marketing

Number of markets and mode of transportation

Average number of markets without electricity facilities were found about eleven. Due to electricity constraints local businessmen were in trouble. Therefore, ensure of electricity should be provided either by public or private sector (Fig. 8).

Bi-cycle was the major mode of transportation in the Upazilla i.e. 65.36 percent of the total transport facilities. Infrastructure facilities should be developed by the public sector for creating earning income of the farmers (Fig. 9).

Market linkage and communication facilities

There are different kinds of markets in the selected Upazilla. Majority of the roads connected with the available market are not well developed (Figure 10). Because of the metalled road are quite inadequate (Table 10).

Number of institution involved in rural development (Bank, Cooperative & NGOs)

Number of agricultural loanees was found highest in Grameen bank followed by BKB (Table 11). All other loan giving agencies were not found to provide enough loan to increase agricultural production. Therefore, other credit institutions should provide sufficient loan to the farmers to increase production in the agricultural sector. Average number of cooperative society with the number of member in each society was shown in Table 12. Local NGOs were found double than the national NGOs (Fig. 11) working in the Upazilla.

Economic condition of the farmers

There categories of farm have been shown in this analysis, which are small, medium and large farms (Table -13). Considering all the regions it was found that the number of farm households moving downwards day by day and this declination stands at 16 percent from 1984 to 1996. They are basically all medium and large farms. On the other hand the proportion of small farm household is increasing day by day. Specially in the eastern and northern part of Bangladesh. Other regions i.e. southern and central part declinations are very few.

The probable causes for downward shifting of medium and large farmers are that farming are not at profitable business in Bangladesh. Due to this unprofitable business, most of the medium and large farmers are employing themselves in other non-agril. activities. On the other hand, the causes of upward shifting of small farm was that, the small farm can not employ themselves in other non-agril. activities. Actually most of the small farmers are poor and tenant and they continue farming renting from the medium and large farm households. Consequently, the number of small farmer is shifting upward day by day. Another cause might be that, with the rapid increase in population the number of farm families is also increasing. As a result the land of medium and large farm households are being subdivided leading to a sharp increase in the small farm community.

IV. SUMMARY AND CONCLUSIONS

The collected data of the GIS project should be made available within the earliest possible time for use of the concerned people. Secondly, BARC should take step to collect data from rest of the Upazillas of Bangladesh. Thirdly, GOB should take measures to collect data from all Upazillas through the respective departments by using common schedule. This should be a continuous process. Scope still exists for revision/improvement of the survey schedule.

In the year 1996-97; 1997-98, 1998-99 it was found that the yield of Aman rice was decreasing. On the other hand the yield of Boro rice is increasing.

The area coverage of BR11 is still high compared to other modern T. Aman varieties but, due to seed contamination of these popular variety, yield is declining substantially. The yield of Boro rice is increasing because of the introduction of BRRI dhan28 and BRRI dhan29. In all the seasons, the benefit cost ratio was the higher in MV Boro rice (1.47) followed by MV T.Aman (1.43) and MV Aus (1.30) rice. Highest benefit cost ratio of non rice crop was obtained in Banana Cultivation (4.31) followed by Garlic (2.85) and Onion (2.61)

The number of farm households is shifting downward day by day because of the decreasing number of medium and large farmers. The overall consequence seems to be positive in terms of economic development.

Recommendation and suggestions:

BR11 should be replaced by the newly release varieties in T.Aman season. Those are BRRI dhan30, BRRI dhan31, BRRI dhan32, BRRI dhan33, BRRI dhan34 whose yield are higher than BR11. On the other hand, the adoption of BRRI dhan28 and BRRI dhan29 should be expanded to increase yield in Boro season. Extension people as well as NGOs can play an important role for diffusing of these varieties. Govt. should take some steps so that Banana production should be encouraged in the possible areas of Bangladesh. In addition:-

- 1) BR11 should be replaced by BRRI dhan30, BRRI dhan31, BRRI dhan32, BRRI dhan33, and BRRI dhan 34 in T. Aman season.
- 2) The adoption of BRRI dhan 28, and BRRI dhan 29 should be expanded in Boro season.
- 3) Banana production should be increased in possible areas of Bangladesh.

The data so far generated will be useful to the planners and policy makers for making rational production plan with regards to land utilization, a crop production purposes and other related fields. Further, this will be useful to the researchers in future research undertakings in the Upazillas of Bangladesh.

V. REFERENCES

Bibliography

- BBS (1999): Census of Agriculture 1996 Agricultural Sample Survey 1997 National Series Volume 1, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (1999): Census of Agriculture 1996 Agricultural Sample Survey 1997 National Series Volume 2, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (1992): Bangladesh Population Census 1991, Community Series (**Various Issues**), Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (1993): Bangladesh Population Census 1991, Zila Series (**Various Issues**), Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (1999): Statistical Pocketbook of Bangladesh 1998, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (2000): Statistical Pocketbook of Bangladesh 1999, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (1998): Report on Crop Survey (Aman, Wheat, Potato and Sugarcane), Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (1998): Statistical Yearbook of Bangladesh 1997, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.
- BBS (1998): The Bangladesh Census of Agriculture and Livestock: 1983-84, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the People's Republic of Bangladesh.

Table: 1 List of Upazillas selected for BRRI Team.

L.NO.	DISTRICT ID	UPAZILLA-ID	DISTRICT NAME	UPAZILLA NAME
1	06	10632	BARISAL	AGAILJHARA
2	06	10632	BARISAL	GAURNADI
3	06	10651	BARISAL	BARISAL SADAR
4	06	10652	BARISAL	MEHENDIGONJ
5	06	10918	BHOLA	BHOLA SADAR
6	06	10921	BHOLA	BURHANUDDIN
7	22	22224	COX'S BAZAR	COX'S BAZAR SADAR
8	26	32618	DHAKA	KERANIGANJ
9	56	35610	MANIKGANJ	DAULATPUR
10	56	35648	MANIKGANJ	MANIKGANJ SADAR
11	56	35670	MANIKGANJ	SATURIA
12	56	35682	MANIKGANJ	SHINGAIR
13	27	52717	DINAJPUR	BIRAL
14	27	52721	DINAJPUR	BOCHAGANJ
15	27	52733	DINAJPUR	CHIRIRBANDAR
16	27	52755	DINAJPUR	KAHAROLE
17	27	52764	DINAJPUR	DINAJPUR SADAR
18	32	53224	GAIBANDHA	GAIBANDHA SADAR
19	32	53230	GAIBANDHA	GOBINDAGANJ
20	32	53267	GAIBANDHA	PALASHBARI
21	49	54908	KURIGRAM	RAJIBPUR
22	49	54961	KURIGRAM	NAGESHWARI
23	52	55202	LALMONIRHAT	ADITMARI
24	52	55239	LALMONIRHAT	KALIGANJ
25	52	55255	LALMONIRHAT	LALMANIRHAT SADAR
26	64	56447	NAOGAON	MANDA
27	64	56460	NAOGAON	NAOGAON SADAR
28	64	56479	NAOGAON	PORSHA
29	69	56963	NATORE	NATORE SADAR
30	73	57345	NILPHAMARI	KISHOREGANJ
31	73	57385	NILPHAMARI	SAIDPUR
32	77	57704	PANCHAGARH	ATWARI
33	77	57725	PANCHAGARH	BODA
34	77	57734	PANCHAGARH	DEBIGANJ
35	81	58125	RAJSHAHI	CHARGHAT
36	81	58134	RAJSHAHI	GODAGARI
37	81	58153	RAJSHAHI	MOHANPUR
38	85	58558	RANGPUR	MITHAPUKUR
39	85	58559	RANGPUR	RANGPUR SADAR
40	85	58573	RANGPUR	PIRGACHHA
41	94	59408	THAKURGAON	BALIADANGI
42	94	59451	THAKURGAON	HARIPUR
43	94	59486	THAKURGAON	RANISANKAIL
44	94	59494	THAKURGAON	THAKURGAON SADAR
45	36	63611	HABIGANJ	BANIACHONG
46	36	63644	HABIGANJ	HABIGANJ SADAR
47	36	63671	HABIGANJ	MADHABPUR
48	58	65880	MOULVIBAZAR	RAJNAGAR
49	91	69108	SYLHET	BALAGANJ
50	91	69120	SYLHET	BISHWANATH

Table: 2 Percentage distribution of population by age group under different regions.

Age distribution	Regions				All
	Southern part	Eastern part	Central part	Northern part	
15 years +	56	51	55	59	56
10-14 years	17	22	16	15	17
5-9 years	27	27	29	26	27

Source : BBS,1996

Table: 3 Distribution of the households by pattern of occupation in the selected Upazillas, 1996.

Occupation category	Share of total (in%)
Agriculture	67.29
Agril. wage labour	13.01
Non- Agril. wage labour	4.73
Business	5.60
Service	4.86
Poultry	1.88
Fisherman's	0.89
Dairy	0.92
Carpenters	0.37
Blacksmith	0.15
Weavers	0.14
Handicrafts	0.16

Source: Upazilla Agriculture Office, Fisheries, Livestock, BBS & NGOs.

Table: 4 Distribution of the sample households according to farming category in the selected Upazillas,1996.

Type of household	% of household
Non-farm household	24.14
Landless household	9.34
Farm household :	66.52
Tenant	9.33
Marginal	11.61
Small	36.33
Medium	8.05
Large	1.20

Source: BBS, 1996.

Table: 5 Average number of irrigation equipments available in the study Upazillas, 1996.

Type of equipment	Number of equipment		Total
	Electric	Diesel	
LLP	49.26	633.94	683.20
STW	82.48	166.50	1749.98
DSSTW	0.38	53.94	54.32
VDSSTW	0	4.00	4.00
FNTW	25.26	63.64	88.90
DTW	37.46	27.76	65.22
MOPU			25.66
Traditional			1034.78

Source : NMIDP- NMIC.

Table: 6 Average yield of paddy (t/ha) in the selected site during 1996-97 to 1998-99.

YEAR	Aus		Boro		T.Aman	
	LV	MV	LV	MV	LV	MV
1998-99	1.21 (1.37)	2.61 (2.51)	2.20 (2.40)	4.62 (4.69)	1.76 (1.68)	2.96 (2.92)
1997-98	1.34 (1.43)	2.67 (2.72)	2.18 (2.34)	4.41 (4.44)	1.60 (1.66)	3.16 (3.10)
1996-97	1.38 (1.40)	2.7 (2.67)	2.22 (2.19)	4.18 (4.24)	1.84 (1.91)	3.31 (3.29)

Figures In parentheses are national data

Source: DAE and DAM records.

Table : 7 Average yield (t/ha) of different agricultural crops in the selected Upazillas from 1996-97 to 1998-99.

Crops	Year		
	1996-97	1997-98	1998-99
Jute (Deshi)	1.21	1.22	1.23
Jute (Tossa)	1.41	1.40	1.36
Cotton	0.06	0.06	0.06
Kheshari	0.78	0.71	0.67
Lentil	0.87	0.86	0.81
Chickpea	0.80	0.78	0.81
Mungbeen	0.60	0.59	0.56
Blackgram	0.72	0.61	0.66
Tobacco	0.37	0.38	0.37
Mustard	0.90	0.93	0.93
Soybean	0.24	0.20	0.33
Sesame	0.44	0.46	0.46
Groundnut	0.86	0.82	0.86
HYV Wheat	1.92	2.00	1.93
Potato	14.73	14.69	15.17
Millet	0.18	0.14	0.15
Sweet Potato	13.39	14.03	12.97
Sugarcane	32.84	32.83	32.99
Maize	2.43	2.88	2.97
Brinjal	9.14	9.02	9.70
All vegetables	12.56	12.11	12.71
Radish	8.43	8.44	8.80

Source: DAE & DAM records.

Table: 8 Benefit- cost ratio of different crops of Bangladesh

Name of the Crops		BCR
Aus	LV	1.047
	MV	1.30
T.Aman	LV	1.19
	MV	1.434
Boro	LV	1.08
	MV	1.47
	Hybrid	1.52
Jute		1.067
Lentil		1.68
Chickpea		1.718
Mungbeen		1.617
Mustard		1.545
Sesame		1.577
Groundnut		1.525
HYV Wheat		1.196
Potato		1.88
Sugarcane		2.056
Maize		1.545
Banana		4.31
Onion		2.61
Garlic		2.85

Source: Analysis from the survey data, 2000

Table: 9 Distribution of non-crop enterprises in the selected Upazillas by type of enterprises, 1996

Type of enterprise	Average number/per Upazilla
Commercial poultry farms	56.96
Commercial dairy farms	27.78
Sweet water fish farms	34.02
Shrimp farms	5.08
Fish hatcheries	1.56
Plant nursery	18.18
Beef fattening	11.06
Flouriculture farm	0.38

Source: Upazilla level interview.

Table: 10 Available road facilities in the study Upazillas according to type of roads, 1996.

Type of road	Metal pavement (km)	HBB/WIM(km)	Earthen kutcha(km)
National Highway	12.38	--	--
Feeder road Type-A	15.83	2.17	7.46
Feeder road Type-B	24.41	4.82	23.31
R-1	9.87	7.48	140.93
R- 2	1.05	1.35	116.19
R- 3	1.74	3.34	209.07

Source: Upazilla LGED office.

Table: 11 Distribution of commercial banks available in the selected Upazillas,1996.

Name of Bank	Average no of bank	No of agril. loanees
Sonali bank	2.26	11.42
Janata bank	2.00	416.16
Pubali bank	0.70	22.40
Rupali bank	0.90	1.70
Agrani bank	1.34	226.70
BKB/RAKUB	2.74	3523.56
Grameen bank	3.00	4242.32
PKSF	0.08	20.90
GKF	0.42	700.30

Source: Respective banks at the Upazilla.

Table: 12 Average number of rural cooperative society under different organizations,1996.

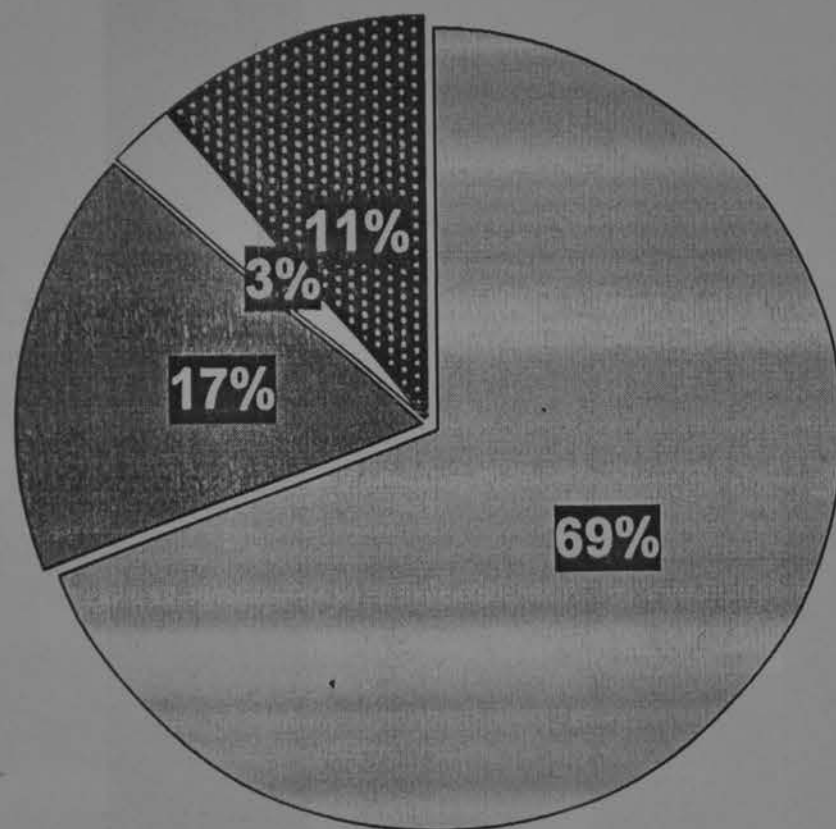
Type of society	Average number of society	Members of each society
BRDB	161.00	5778.54
Cooperative	121.36	7160.80
RBP	48.64	1600.48

Source BRDB office.

Table:13 Dynamics of farm household under different regions in Bangladesh, 1984-1996.

Regions	Small			Medium			Large			All		
	1984	1996	% of changes	1984	1996	% of changes	1984	1996	% of changes	1984	1996	% of changes
Southern part	50272	50824	-1	45548	31492	-31	22649	14407	-36	118469	96743	-18
Eastern part	37755	47955	+27	49651	43079	-13	37393	16602	-55	124709	107636	-13
Central part	16356	15702	-4	17451	14685	-16	5065	4124	-19	38872	3451	-11
Northern part	77936	101677	+30	194773	171375	-12	135060	99850	-26	407769	372902	-9
All	182319	216158	--	307333	260631	--	200167	134983	--	689819	580732	(-16)

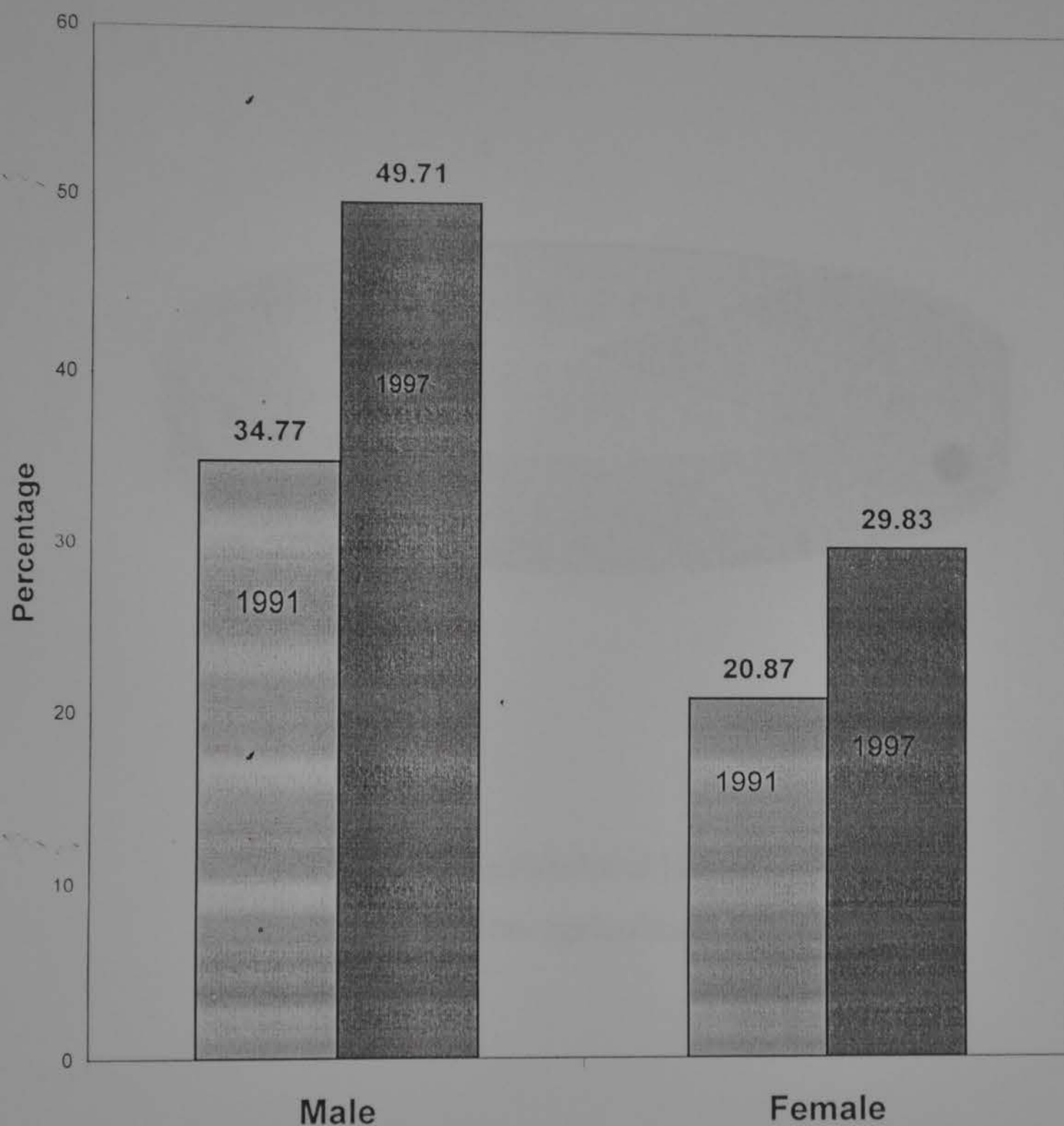
Fig 1'. Distribution of average educational institution in the selested upazilla



- ☐ Primary
- ☒ High school
- ☐ College
- ☒ Madrasa

Source: Upazilla LGED Office, 1996

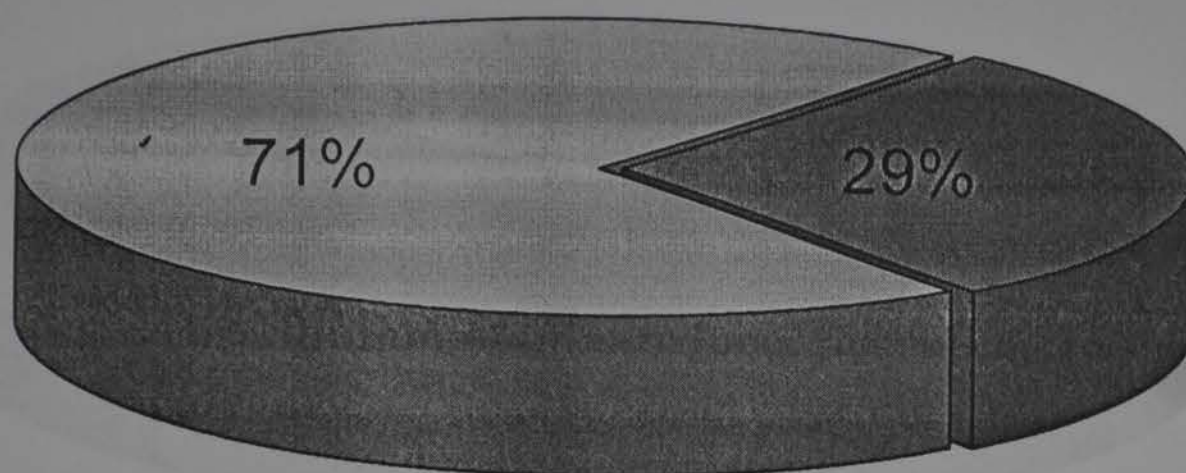
Fig 2. Percentage changes in the ratio of gender differences in the study upazilla, 1991-1996



Source: BBS, 1996



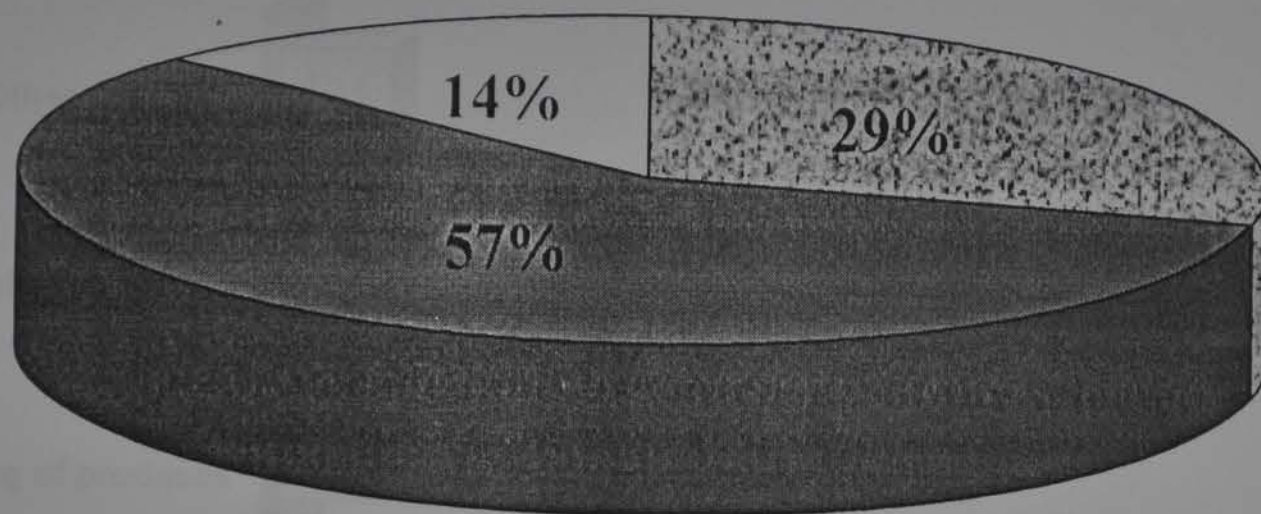
Fig 3. Distribution of labour force according to job category, 1996



- ☐ Agricultural labour
- ☒ Non-agricultural labour

Source: Upazilla Agriculture Office

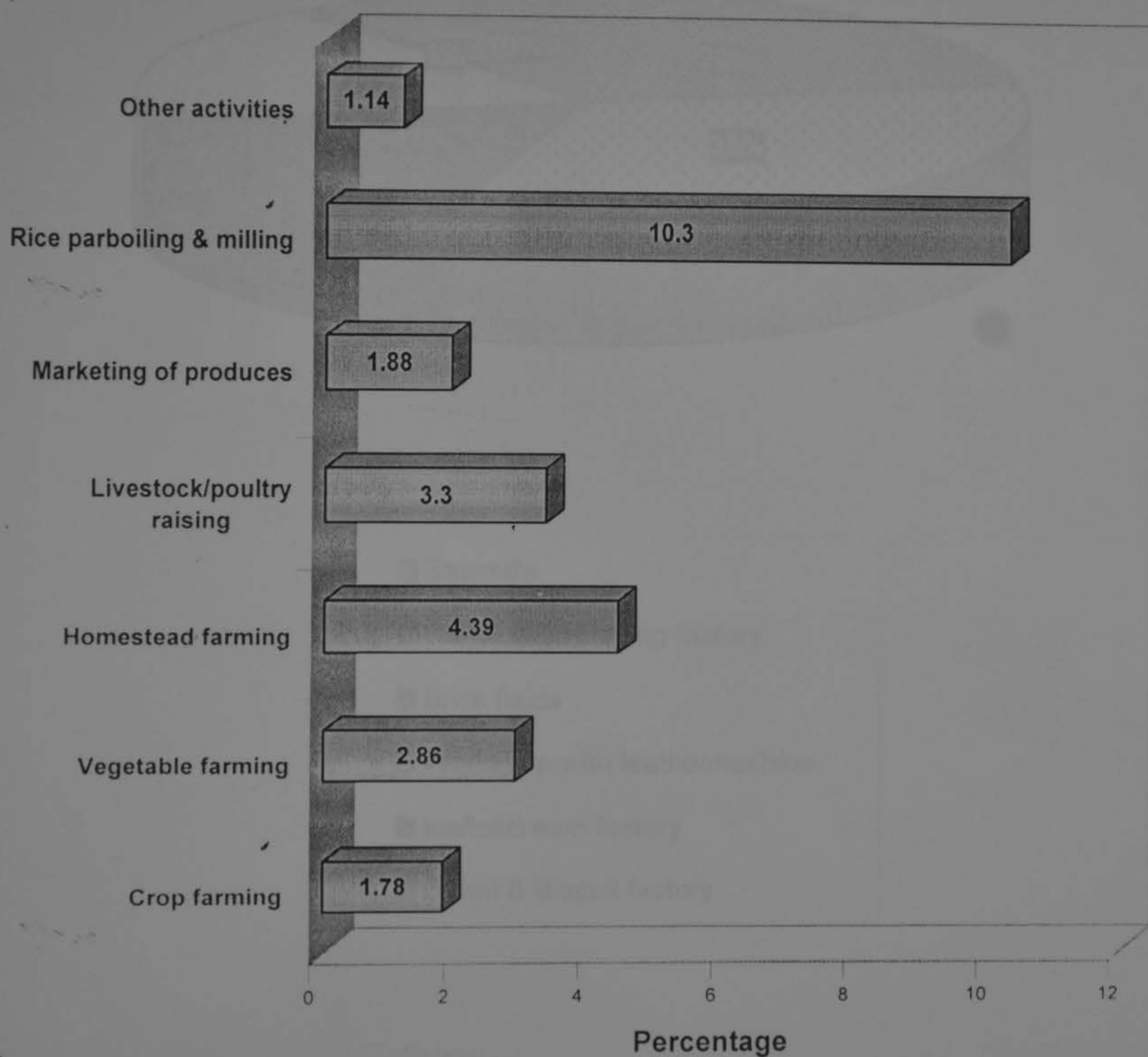
Fig 4. Average land use intensity of the selected upazilla in Bangladesh, 1996



- ☐ Single cropped land
- ☒ Double cropped land
- ☐ Tripple cropped land

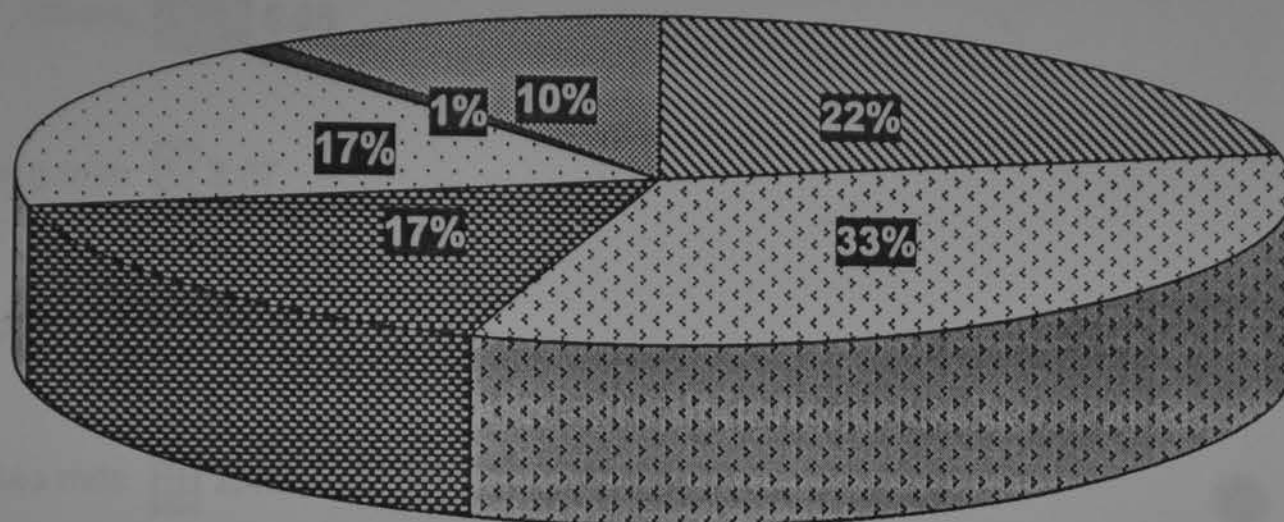
Source: Upazilla Agriculture Office of different districts

Fig. 5 Women's participation in agricultural activities by type of operation in the selected upazilla



Source: Field survey, 2000

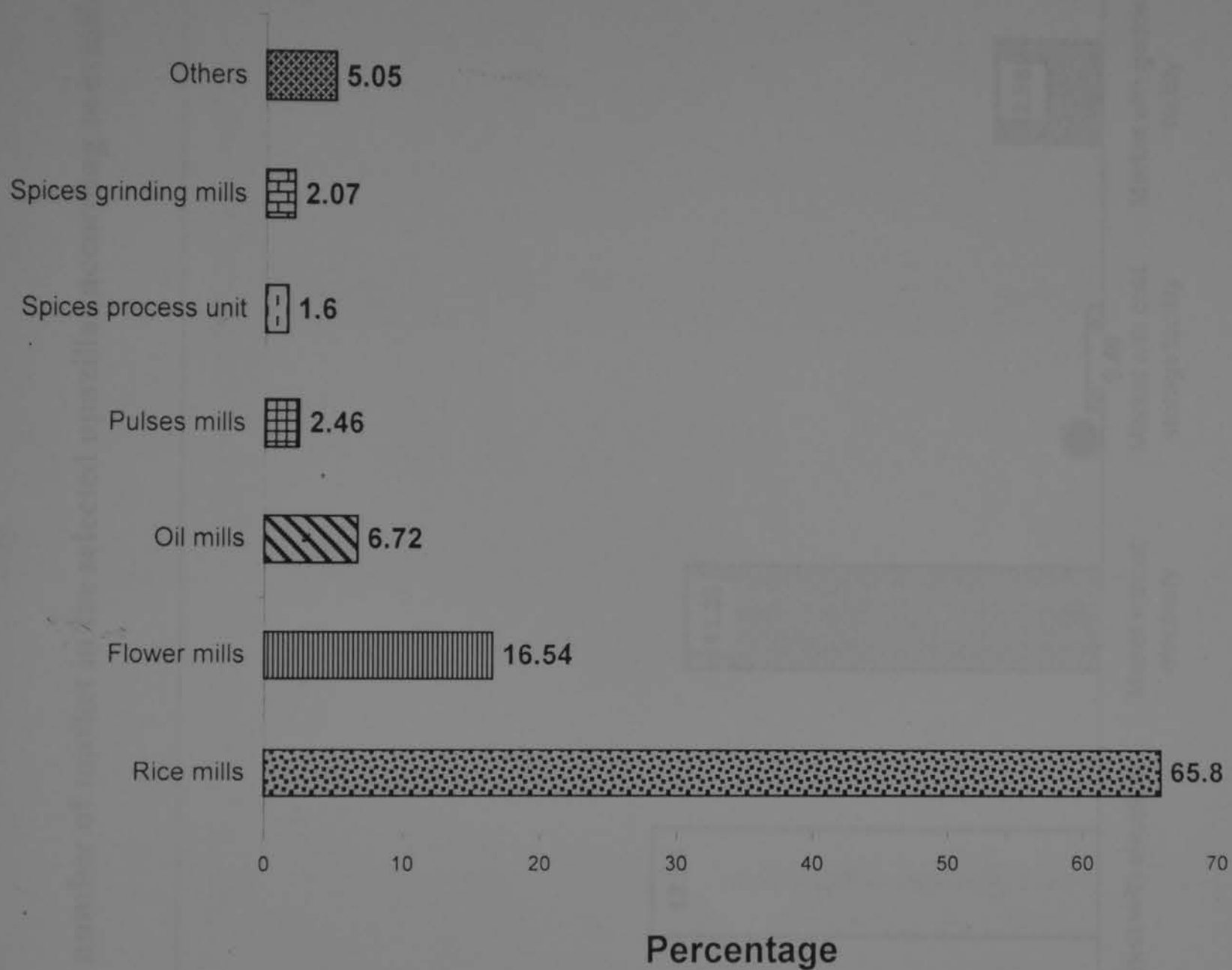
Fig 6. Percentage of small industry & factory available in each upazilla



- ▣ Sawmills
- Handloom/weaving factory
- ▣ Brick fields
- Workshop with leather/mechine
- Ice/Icecream factory
- ▣ Bread & Biscuit factory

Source: Upazilla level survey, 2000

Fig. 7 Percentage of post-harvest processing units in each upazilla



Source: Upazilla level survey, 2000

Fig. 8 Average number of market in the selected upazillas according to avialble facility

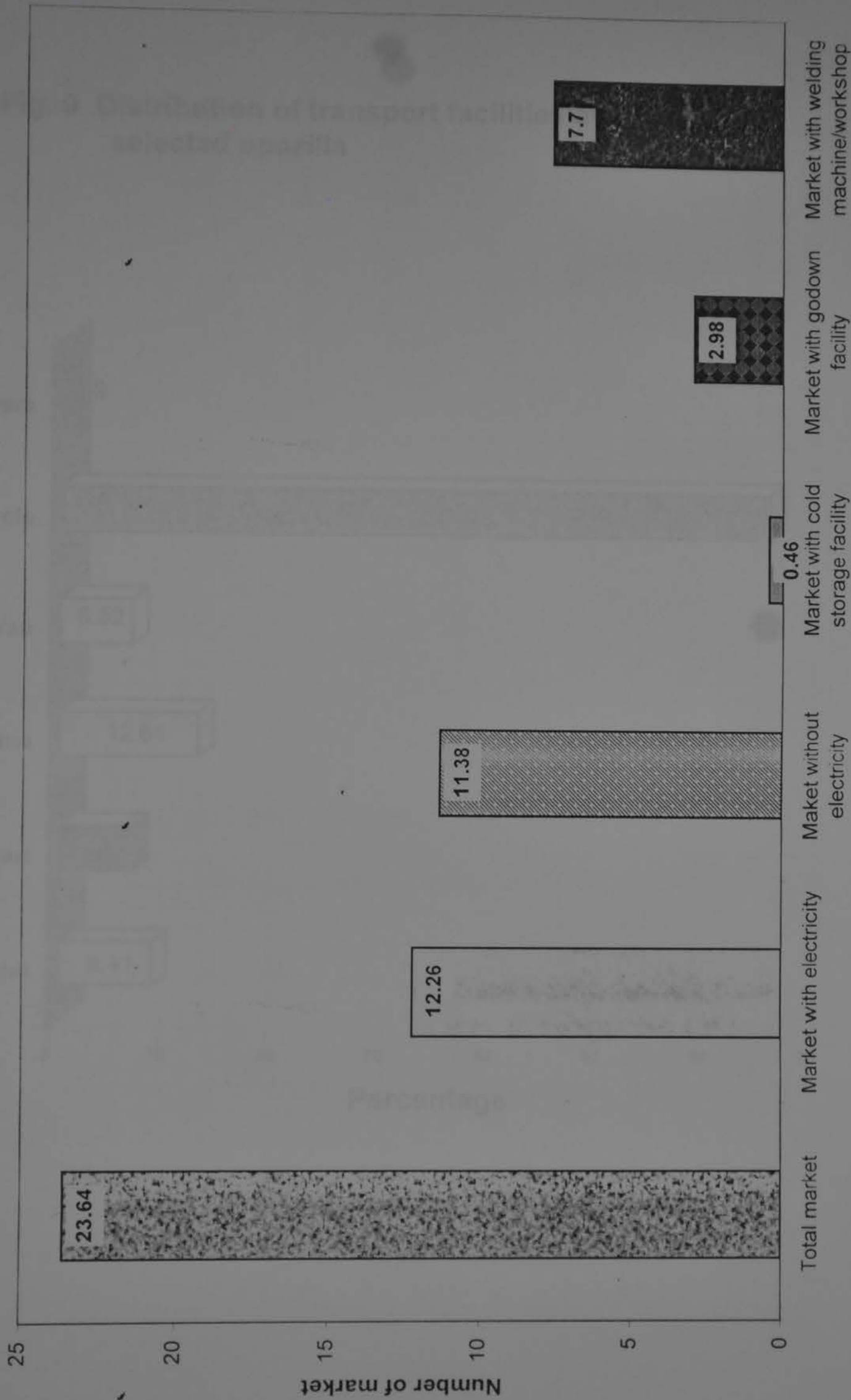
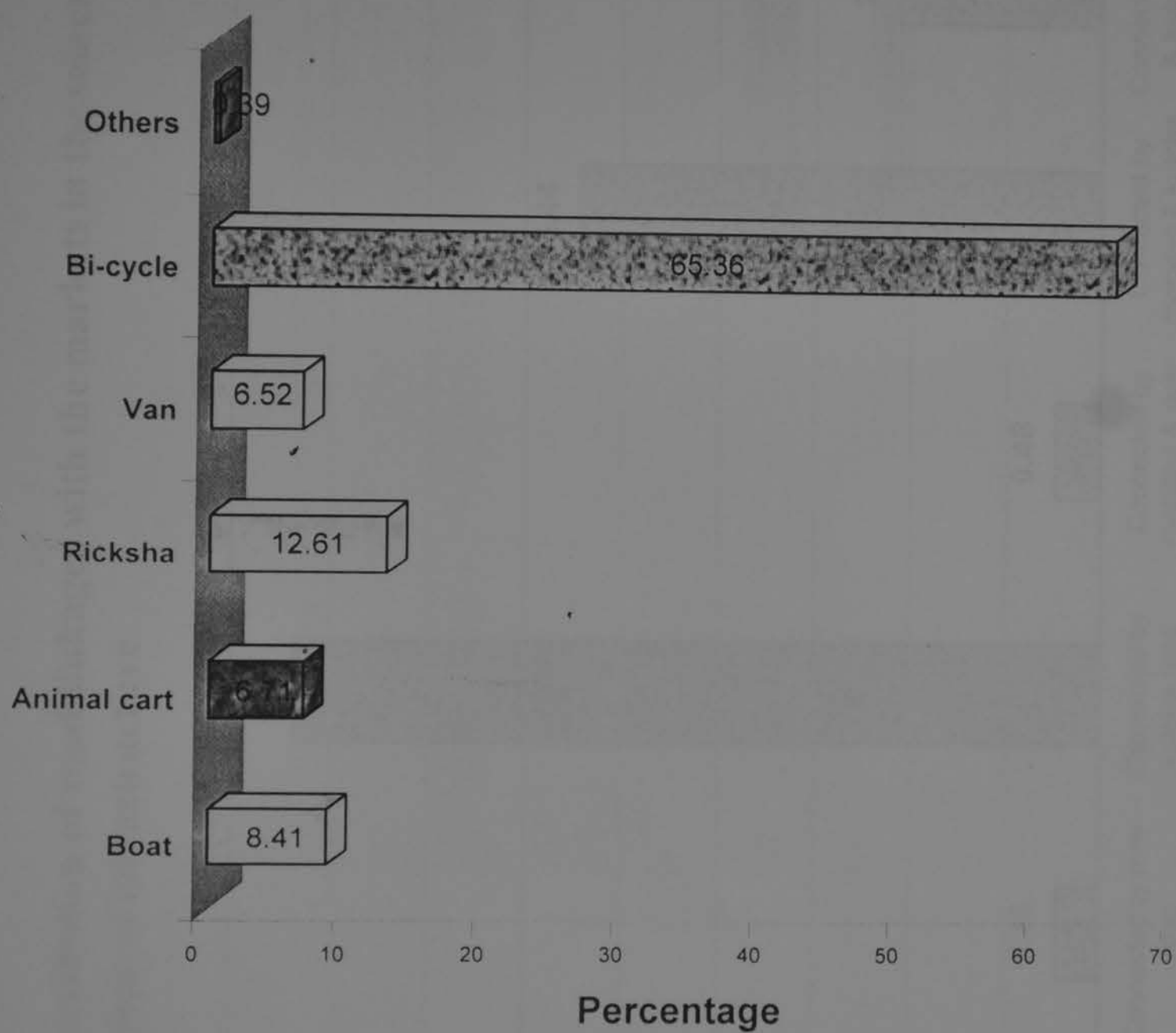
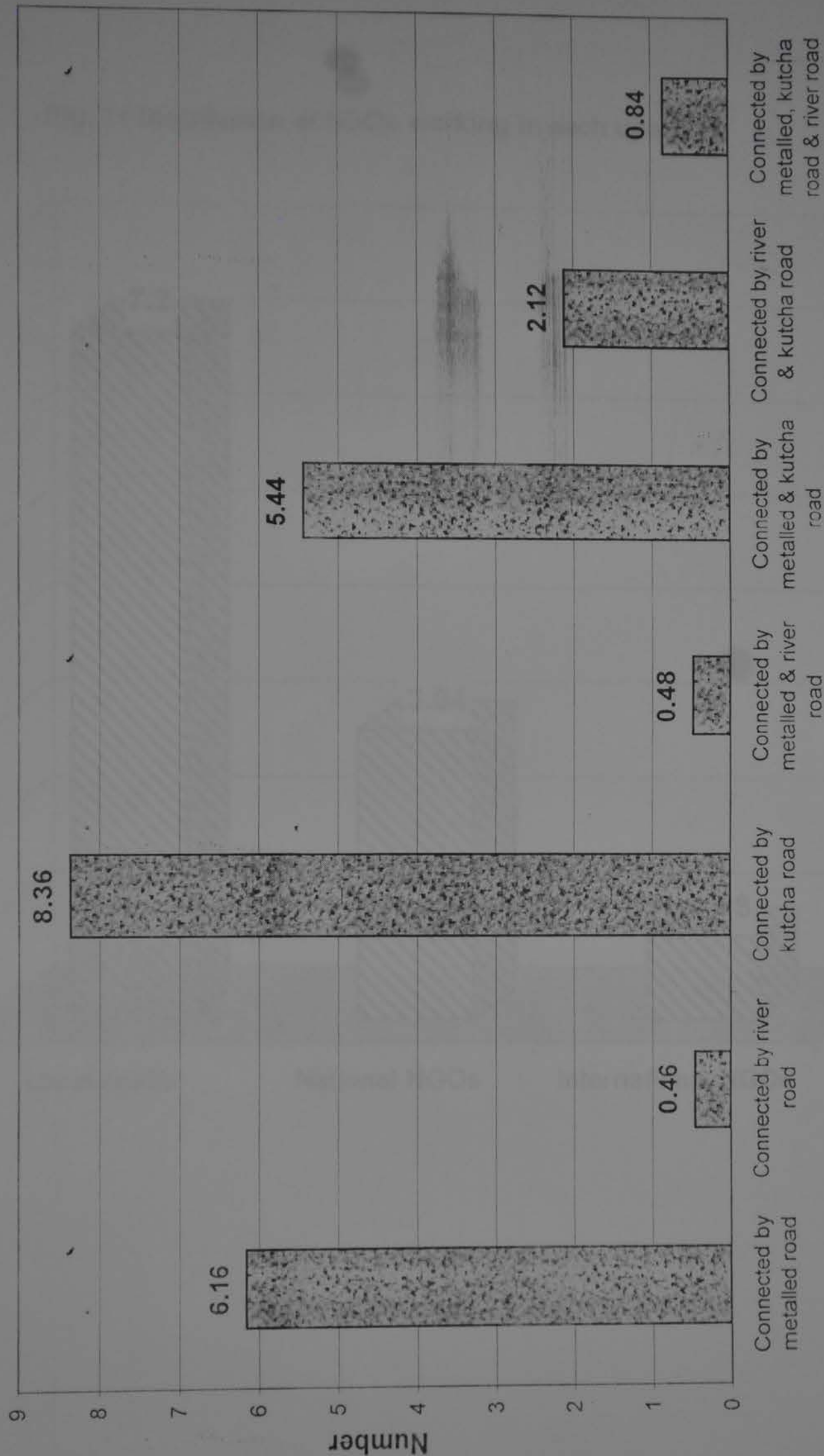


Fig. 9 Distribution of transport facilities available in the selected upazilla



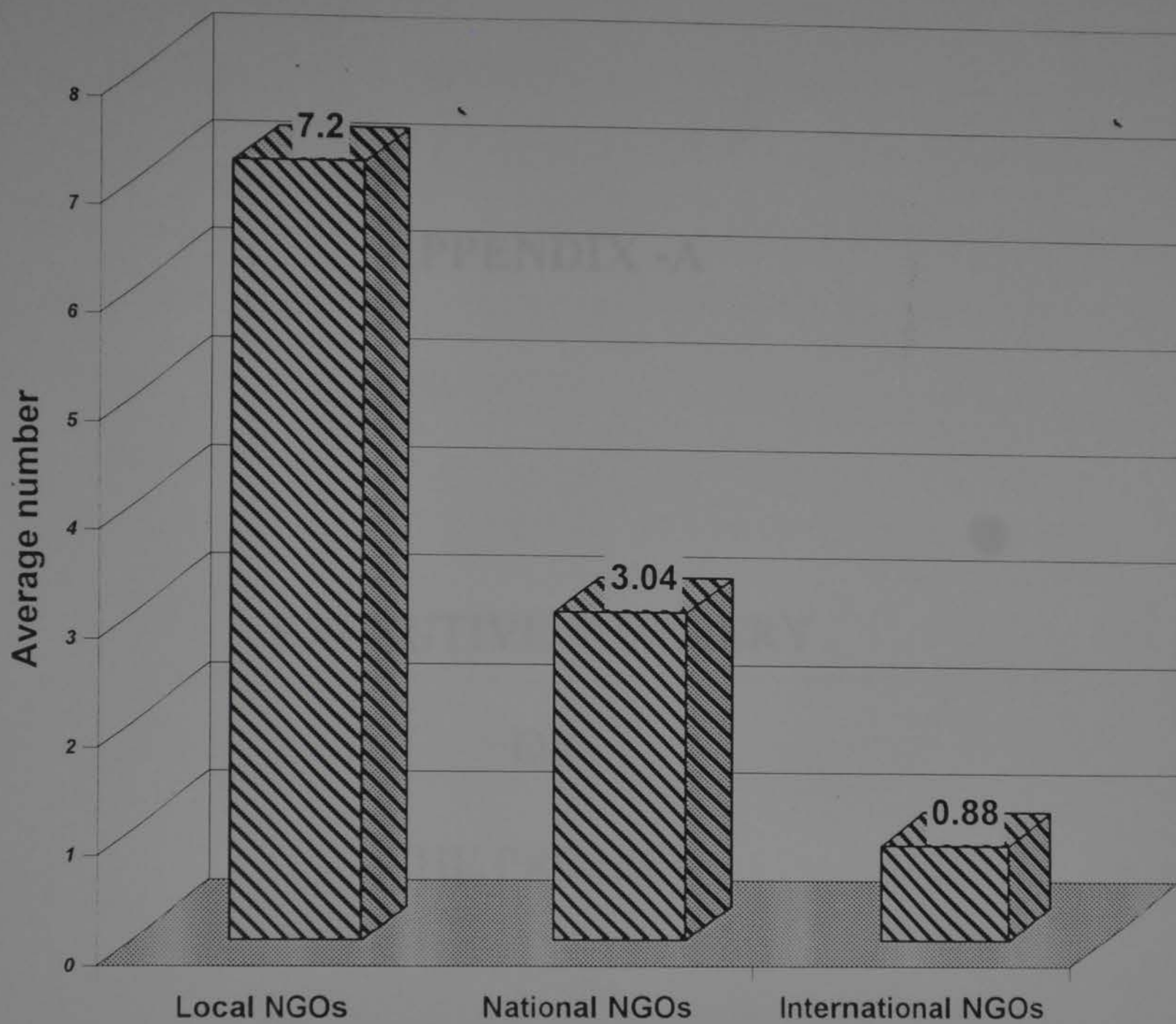
Source: Agriculture census, 1996

**Fig. 10 Distribution of road linkages with the markets in the selected upazillas
by type of infrastructure**



Source: Upazilla level survey, 2000

Fig. 11 Distribution of NGOs working in each upazillas



Source: Local NGOs, Department of Social Welfare and NGO Bureau, 2000

APPENDIX -A

EXECUTIVE SUMMERY

OF

THE PROJECT

Coordinated project on Generation of GIS based Socio-Economic Data.

Executive Summary of the project :

The geographical information system(GIS) is specially designed for simultaneous processing of Socio-Economic and other related data. Due to some unavoidable reasons particularly social as well as physical reasons the data is changing overtime and these changes are often not being taken in to consideration. To avoid that the present study has been under taken to fulfill the following objective: -

- i) To collect Socio-Economic Data from the secondary as well as primary sources at the Upazilla level;
- ii) To enter data in the computer and process it for submission to GIS project.
- iii) To undertake several repeat visit for data collection checking if necessary.

Data have been collected from 50 Upazillas of 19 district on demography, literacy, household data related to land agriculture, non agriculture and occupation, farm labour Agricultural wages infrastructure, credit and market relation information, cooperative etc. These data have been collected from the different secondary sources under each Upazilla office. In addition lost and returns data has been collected from the block supervisor of each Upazilla and by interviewing the farmers.



Three categories of farm have been shown in this analysis, which are small, medium and large farms. Considering all the regions it was found that the number of farm households moving downwards day by day and this decline stands about 16percent from 1984 to 1996. They are all medium and large farms. On this other hand the proportion of small farm household increasing day by day.

In the year 1996-97, 1997-98,1998-99 it was found that the yield of T. Aman rice was decreasing. On the other hand the yield of Boro rice is increasing. The main causes for decreasing T. Aman yield is that major MV areas of the T. Aman season was covered by BR11. From the survey it was found that the yield of BR11 was decreasing leading to an eventual decrease in the yield of T. Aman rice. The yield of Boro rice is increasing because of the introduction of BRdhan 28 and BRdhan 29.

In all the seasons, the benefit cost ratio was the higher in MV Boro rice (1.47) followed by MV T.Aman (1.43) and MV Aus (1.30) rice. Highest benefit cost ratio of non rice crop was obtained in Banana Cultivation (4.31) followed by Garlic (2.85) and Onion (2.61)

The number of farm of households is shifting downward day by day because the decreasing number of medium and large farmers. The over all consequence seems to be positive in terms of economic development.

Transferable Technology (ies)

- 1) BR11 should be replaced by BR11dhan 30, BR11dhan 31, BR11dhan 32, BR11dhan 33, and BR11dhan 34 in T. Aman season.

APPENDIX -B

- 2) The adoption of BR11dhan 28 and BR11dhan 29 should be increased in Boro season.

TRANSFERABLE TECHNOLOGIES

- 3) Bara's production should be increased in post-rice areas of Bangladesh.

Transferable Technology (ies)

- 1) BR11 should be replaced by BRRIdhan 30, BRRIdhan 31, BRRIdhan 32, BRRIdhan 33, and BRRIdhan 34 in T. Aman season.
- 2) The adoption of BRRIdhan 28, and BRRIdhan 29 should be increased in Boro season.
- 3) Banana production should be increased in possible areas of Bangladesh.

Table: POP Data (87), Age Distribution (B) and Literacy (87)

Field Name	Code of Variable
SEX CODE (Sex type)	1= Male 2= Female
AGE CODE (Age group)	1= 5 - 9 years 2= 10 - 14 years 3= 15 years +

Table: HH Classification (C1) and HH Occupations (C7)

Field Name	Code of Variable
HH TYPE (Household type)	1= Total household 2= Non-farm household 3= Marginal farmers (0.05 - 0.49 acres) 4= Small farmers (0.50 - 2.49 acres) 5= Medium farmers (2.50 - 7.49 acres) 6= Large farmers (7.50 acres +) 7= Farm household (4+ acres) 8= Landless household 9= Tenet household 10= Agricultural household
HH LOC CODE (Household Occupation type)	1= Farm households 2= Agri. Wage labour households 3= Non-agri. Wg. labour households 4= Service households 5= Mining/Quarrying households 6= Dug households 7= Fisheries households 8= Business households 9= Commerce households 10= Professional households 11= Services households 12= Traditional households 13= Other occupational households 14= Mixed households 15= Third labour type (% of working popn.) 16= Agricultural labour type (% of working popn.)

APPENDIX -C

CODE SHEET

Tables: POP Data (B1), Age Distribution (B2) and Literacy (B3)

Field Name	Code of Variable
SEX-CODE (Sex type)	1= Male 2= Female
AGE-CODE (Age group)	1= 5 – 9 years 2= 10 – 14 years 3= 15 years +

Tables: HH-Size (C1)

Tables: HH-Classification (C1) and HH-Occupation (C2)

Field Name	Code of Variable
HH-CODE (Household type)	1= Total household 2= Non-farm household 3= Marginal farmers (0.05 - 0.49 acres) 4= Small farmers (0.50 – 2.49 acres) 5= Medium farmers (2.50 – 7.49 acres) 6= Large farmers (7.50 acres +) 7= Farm household (4+5+6) 8= Landless households 9= Tenant households 10= Agricultural labour households
HH-OC-CODE (Household Occupation type)	1= Farm households 2= Agril. Wage labour households 3= Non- agril. Wage labour households 4= Service households 5= Poultry farmers' households 6= Dairy households 7= Fishermens' households 8= Business households 9= Carpenters households 10= Blacksmith households 11= Weavers households 12= Handicrafts households 13= Other occupational households 14= Mixed households 15= Rural labour force (% of working popn.) 16= Agricultural labour force (% of working popn.)

2. LAND DATA (D)

Table: HHs & Area (D1)

Field Name	Code of Variable
FHH-CODE (Household category)	1= All holdings 2= All non-farm h/h 3= All farm h/h 4= Marginal farmers 5= Small farmers 6= Medium farmers 7= Large farmers

Table: Holding Size (D2)

Field Name	Code of Variable
AREA-CODE (Land use type)	1= Total owned area (18)* 2= Area rented out (22) 3= Area rented in (26) 4= Total operated area (30) 5= No. of fragments of total operated area (06/schedule-2) 6= Homestead area (34) 7= Net cultivated area (38) 8= Area under permanent crops (42) 9= Net area under temporary crops (46) 10= Net area irrigated (50) 11= Net area fertilized (54) 12= Grass land

Table: Land Use Intensity (D3)

Field Name	Code of Variable
CFREQ-CODE (Cropping Frequency code)	1= Single cropland 2= Double cropland 3= Triple crop or more land

Table: Tenurial arrangement (D4)

Field Name	Code of Variable
TENU-CODE (Tenurial arrangement system)	1= 1/2 – ½ output, no material input sharing 2= 1/2 - ½ output, ½-1 2 material input sharing 3= 1/3-2/3 output, proportionate material input sharing 4= Fixed cash renting

FARM LABOUR & INFRASTRUCTURE DATA (E1, E2, F1, F2 & F3):

Table: Farm level data (E1)

Field Name	Code of Variable
EMPLO-CODE (Type of employment)	1= Self employment 2= Assisting family 3= Wage labour to other households

Table: Wage Rate (E2)

Field Name	Code of Variable
SEASN-CODE (Season code)	1= Rabi'98/99 2= Boro'98/99 3= Aus'99 4= Aman'99

Table: Electricity Availability (F1)

Field Name	Code of Variable
ELEC-CODE (Electricity availability code)	1= Villages with electricity 2= Villages without electricity

Table: Roads & Communication (F2)

Field Name	Code of Variable
ROAD-CODE (Type of road)	1= National Highway 2= Feeder road type-A 3= Feeder road type-B 4= R-1 5= R2 6= R3

Table: Transport data (F3)

Field Name	Code of Variable
TRASP-CODE (Type of Transport)	1= Boat 2= Animal cart 3= Rickshaw 4= Van 5= Cycle 6= Others

INFRASTRUCTURE DATA (F4, F5, F6 & F7)

Table: Educational Inst (F4)

Field Name	Code of Variable
INST-CODE (Educational Institution type)	1= Primary school 2= High school 3= College 4= University 5= Madrasha

Table: Industries & Factories (F5)

Field Name	Code of Variable
INDUS-CODE (Type of Industries)	1= Saw mills 2= Handloom/Weaving factory 3= Brick fields 4= Workshops with Lathe machine 5= ice/Ice cream factory 6= Bread and biscuit factory

Table: Processing units (F6)

Field Name	Code of Variable
P-UNI-CODE (Type of processing units)	1= Rice mills 2= Flour mills 3= Oil mills 4= Pulses mills 5= spices processing units (steaming, drying etc.) 6= Spices grinding mills 7= Others

Table: Cold storage facilities (F7)

Field Name	Code of Variable
COMM-CODE (Type of Commodity)	1= Potato 2= Mango 3= Pineapple 4= Banana 5= Others

MARKET & AGRI. CREDIT DATA (G1, G2, H1 &H2):

Table: Market Facilities (G1)

Field Name	Code of Variable
M-FACI-CODE (Market facilities available)	1= Total markets 2= Markets with electricity 3= Market without electricity 4= Markets with cold storage facilities 5= Markets with godown facilities 6= Markets with welding machine/workshop

Table: Market Connections (G2)

Field Name	Code of Variable
M-CON -CODE (Market connections type)	1= Connected by metalled road 2= Connected by river route 3= Connected by kutchra road 4= Connected by metalled and river route 5= Connected by metalled and kutchra road 6= Connected by river and kutchra road

Table: Banks of credit distribution (H1)

Field Name	Code of Variable
BANK-CODE (Name of Bank)	1= Sonali bank 2= Janata bank 3= Pubali bank 4= Rupali bank 5= Agrani bank 6= BKB RAKUB 7= Grameen bank 8= PKSf 9= GKF

Table: Cooperative loans (H2)

Field Name	Code of Variable
COOP-CODE (Type of cooperatives)	1= BRDB 2= Cooperative Dept. 3= RBP (poverty alleviation programme)

AGRI. CREDIT & FARM ANIMAL, FARM POWER & EQUIPMENT DATA (H3, H4 & I1):

Table: NGOs Credit distn. (H3)

Field Name	Code of Variable
NGO-CODE (Type of NGOs)	1= Local NGOs 2= National NGOs 3= International NGOs

Table: Non-Inst. Credit (H4)

Field Name	Code of Variable
N-INS-CODE (Type of Non-institutions)	1= Mohajani/ Sudi Business with Gold Mortgage 2= Mohajani/ Sudi Business with Land Mortgage 3= Mohajani/ Sudi Business without any Mortgage

Table: No. of Livestock & Poultry (I1)

Field Name	Code of Variable
L&P-CODE (Livestock & Poultry code)	1= Cows 2= Bullocks 3= Bulls 4= Bufaloas 5= Horse 6= Sheep 7= Goat 8= Chicken 9= Duck

Table: Prodn. of Livestock & Fishery (I1)

Field Name	Code of Variable
LF-PR-CODE (Livestock, Poultry & Fish production code)	10= Beef & cattle production (tons) 11= Mutton & goat production (tons) 12= Poultry production (tons) 13= Milk production (tons) 14= Egg production (Nos.) 15= Production of Fish by fresh water (tons) 16= Production of Fish by marine water (tons)

FARM ANIMAL, FARM POWER & EQUIPMENT DATA (I3 – I7):

Table: Animal Feed Inventory (I3)

Field Name	Code of Variable
FEED-CODE (Animal feed code)	1= Straw 2= Bran 3= Poultry feed 4= Others

Table: Irrigation Equipment (I4)

Field Name	Code of Variable
IR-EQ-CODE (Irrigation Equipment code)	1= LLP 2= STW 3= DSSTW 4= VDSSTW 5= FMTW 6= DTW 7= MOPU 8= Traditional

Table: Tillage Equipment (I5)

Field Name	Code of Variable
T-EQ-CODE (Tillage Equipment Type)	1= Power Tiller 2= Tractor

Table: Irrigation charge (I6)

Field Name	Code of Variable
PAY-CODE (Payment System)	1= Cash. manager's fuel (Tk) 2= Cash. farmer's fuel (Tk) 3= Share of crop (%)

Table: Equip Hiring charge (I7)

Field Name	Code of Variable
EQUIP-CODE (Irrigation Equipment code)	1= Power Tiller 2= Tractor 3= Bullock power (incl.ploughman)

AGRICULTURAL PRODUCTION DATA (J1):

Table: Area & Yield of Crops (J1)

Field Name	Code of Variable
CROP-CODE	1= Local Aus
	2= HYV Aus
(Crops Type)	3= Local Boro
	4= HYV Boro
	5= Hybrid Boro
	6= Local B. Aman
	7= Local T. Aman
	8= HYV T. Aman
	9= Hybrid Aman
	10= Jute (Deshi)
	11= Jute (Tossa)
	12= Cotton
	13= Kheshari
	14= Lentil
	15= Chickpea
	16= Mungbeen
	17= Blackgram
	18= Tobacco
	19= Mustard
	20= Soybean
	21= Sesame
	22= Groundnut
	23= HYV Wheat
	24= Potato
	25= Millet
	26= Sweet Potato
	27= Sugarcane
	28= Maize
	29= Brinjal
	30= Banana
	31= All vegetables
	32= Radish
	33= Mango
	34= Jackfruit
	35= Guava
	36= Pineapple
	37= Papaya
	38= Tea
	39= Onion
	40= Garlic
	41= Watermelon
	42= Cocoanut
	43= Major Fruits

AGRICULTURAL PRODUCTION DATA (J2, J3, J4 & J5):

Table: Food Situation (J2)

Field Name	Code of Variable
F-SITU-CODE (Food situation code)	1= Food Surplus 2= Food Deficit

Table: Non-crop Enterprises (J3)

Field Name	Code of Variable
ENPR-CODE (Non-crop enterprise type)	1= Commercial poultry farm 2= Commercial dairy farm 3= Sweet water fish farm 4= Shrimp farm 5= Fish hatcheries 6= Plant nursery 7= Beef fattening 8= Flouriculture farm 9=Goat farm 10=Sheep farm

Table: Fish production (J4)

Field Name	Code of Variable
FISH-CODE (Type of fisheries)	1= Area under closed fish culture (pond) 2= Area under open water fishing (river/beel) 3= Area under rice-cum-fish culture 4= Shrimp culture

Table: Forest Production (J5)

Field Name	Code of Variable
FOREST-CODE (Type of forest)	1= State owned 2= Private forestry 3= Social/Community forestry 4= Homestead forestry 5= Mangrove forest

AGRICULTURAL PRODUCTION & INPUT DATA (J6 & K1):

Table: Prices of Non-crop Agricultural enterprises (J6)

Field Name	Code of Variable
NCR-CODE (Non-crop agri. enterprises type)	1= Poultry 2= Milk 3= Beef 4= Mutton 5= Big fish (major carps) 6= Small fish (Tengra/Puti etc.) 7= Shrimp 8= Timber (Kathal) 9= Timber (Rintry) 10= Timber (Segun) 11= Timber (Akashia) 12= Timber (Karai)

Table: Prices of Fertilizer & Pesticides (K1)

Field Name	Code of Variable
F-PES-CODE (Fertilizer & Pesticide type)	1= Urea 2= TSP 3= SSP 4= MP 5= DAP 6= Sulphur/ Gypsum 7= Zinc (Sulphate) 8= Pesticides



AGRICULTURAL INPUT DATA (K2 & K3):

Table: Prices of Seeds & Crops (K2)

Field Name	Code of Variable
C-SEED-CODE	1= HYV Boro paddy/99
(Crops seed type)	2= Local Boro paddy/99
	3= HYV Aman paddy/98
	4= Local Aman paddy/98
	5= Wheat/99
	6= Potato/99
	7= Jute/98
	8= Mustard/99
	9= Lentil/99
	10= Chickpea/99
	11= Maize
	12= Soybean
	13= Cotton
	14= Groundnut
	15= Sesame
	16= Tobacco
	17= Sugarcane
	18= Onion
	19= Tea
	20= Mango
	21= Jackfruit
	22= Guava
	23= Pineapple
	24= Papaya
	25= Egg No.

Table: Number of dealers (K3)

Field Name	Code of Variable
DEAL-CODE	1= Fertilizer/ Pesticides
(Dealers' code)	2= Seed
	3= Feeds
	4= Power tiller/Irrigation equipment

AGRICULTURAL INPUT & GENDER DATA (K4 & L1):

Table: Quantity (MT) of Fertilizer sold (K4)

Field Name	Code of Variable
FERT-CODE	1= Urea
(Fertilizer code)	2= TSP
	3= SSP
	4= MP
	5= DAP
	6= Sulphur/ Gypsum
	7= Zinc

Table: Quantity of seeds sold (K4)

Field Name	Code of Variable
SEED-CODE	2= HYV Aus paddy (kg)
(Seed code)	4= HYV Boro paddy(kg)
	5= Boro Hybrid(kg)
	8=HYV Amman paddy(kg)
	11= Jute(kg)
	23= Wheat(kg)
	24= Potato(kg)
	28= Maize(kg)
	31= Vegetable (major) (kg)
	41= Watermelon(kg)
	45= Oilseeds(kg)
	46= Pulses(kg)

Table: Women Participation (L1)

Field Name	Code of Variable
ACT-CODE	1= Crop farming
(Activities code)	2= Vegetable farming
	3= Homestead gardening
	4= Livestock/ Poultry raising
	5= Marketing of produces
	6= Rice parboiling & milling
	7= Other activities

BANGLADESH AGRICULTURAL RESEARCH COUNCIL SCIENCE COUNCIL

Format for collection of Thana Level Socio-Economic
Data to be incorporated into AEZ/GIS Database

Serial No. _____

Date of Filing in _____

A. GENERAL DATA

A1. Thana Code

A2. Name of the Thana

A3. Total Area '01 (Acres)

A4. No. of households '01

APPENDIX -D

(Source: BBS, Population Census, 91, Vol.2, Urban Population, Table 12.1)

B. DEMOGRAPHIC DATA

B1. Population 1

(Source: BBS, Population Census, 91, Vol.2, Table 12.1)

GENERAL QUESTIONNAIRE

Sex	1991 (Census)	1991 (Estimated)
1. Total pop.		
2. Male (No.)		
3. Female (No.)		

B2. Age distribution of Population in 1991

(Source: BBS, Population Census, 91, Vol.2, Table 12.1)

Age group	Male (No.)	Female (No.)
1. 0-4 years		
2. 5-14 years		
3. 15 years +		

B3. Literacy of Population

(Source: BBS, Population Census, 91, Vol.2, Table 12.1) and Statistical Pocketbook, 1997
Table 3.101

Sex	Literate (No. & %)	Literate (No. & %)
1. Male		
2. Female		
3. Total		

BANGLADESH AGRICULTURAL RESEARCH COUNCIL

BGD/95/006: GIS at BARC

Format for collection of Thana Level Socio-Economic Data to be incorporated into AEZ/GIS Database

Serial No:.....

Date of Filling in:.....

A. GENERAL DATA

A1	Thana Code	:	<input type="text"/>
	Name of the Thana	:	<input type="text"/>
	District	:	<input type="text"/>
A2.	Total Area '91 (Acres)	:	<input type="text"/>
A3.	No. of households '91	:	<input type="text"/>

(Source: BBS, Population Census, 91, Vol.2. Union Statistics, Table Uo1)

B. DEMOGRAPHIC DATA

B1. Population :

(Source: BBS, Population Census, 91, Vol.2. Table Uo1 and Statistical Pocketbook, 1997, Table. 3.04)

Sex	1991 (census)	1996 (estimated)
1. Total (No.)		
2. Male (No.)		
3. Female (No.)		

B2. Age distribution of Population in 1991

(Source: BBS, Population Census, 91, Vol.2. Table Uo1)

Age group	Males (No.)	Females (No.)
1. 5-9 years		
2. 10-14 years		
3. 15 years +		

B3. Literacy of Population:

(Source: BBS, Population Census, 91, Vol.2. Table Uo1 and Statistical Pocketbook, 1997, Table 3.04)

Sex	Literacy (7+ Years)' 91 (%)	Literacy (7+ Years)' 96 (%)
1. Male		
2. Female		
3. Total		

C. HOUSEHOLD TYPE DATA

C1. Household Classification: (Source: BBS, 1996 Agricultural Census data under processing)

Household type	Number of households
1. Total household	
2. Non-Farm household	
3. Marginal farmers (0.05-0.49 acres)	
4. Small farm (0.05-2.49 acres)	
5. Medium farmers (2.50-7.49 acres)	
6. Large farmers (7.50 acres +)	
7. Farm household (4+5+6)	
8. Landless households	
9. Tenant households	
10. Agricultural labour households	

C2. Occupational Distribution of Households (Source: Thana level Interview/official records)

Type of households	Number of households
1. Farm Households	
2. Agril. Wage labour Households	
3. Non-agril. Wage Labour Households	
4. Service households	
5. Poultry/Farmer Households	
6. Dairy households	
7. Fishermens' Households	
8. Business Households	
9. Carpenters households	
10. Blacksmith households	
11. Weavers households	
12. Handicrafts households	
13. Other occupational households	
14. Mixed households (60% + 40% income)	
15. Rural labour force	
16. Agricultural labour force	

Data collection from Thana Agriculture Officer, Fisheries, Livestock, BBS & NGOs

D. LAND DATA

D1. Households and area (Source: BBS, Zilla series of Agricultural Census, 1996)

Category	1983-84 Agriculture Census						
	Number	Owned area (acres)	Operated area (acres)	Homes-tead (acres)	Net cultivated area (acres)	Irrigated area (acres)	Cropping Intensity (CI)
1. All holdings							
2. All non-farm hh							
3. All farm hh							
4. Marginal farmers							
5. Small farmers							
6. Medium farmers							
7. Large farmers							

D2. Land holding by farm size group (Source: BBS 1996 Agricultural Census data under processing)

Land area (acres)	Marginal farms	Small farms	Medium farms	Large farms	All farmers
1. Total owned area (18)*					
2. Area rented out (22)					
3. Area rented in (26)					
4. Total operated area (30)					
5. No. of fragments of total operated area (06/schedule-2)					
6. Homestead area (34)					
7. Net cultivated area (38)					
8. Area under permanent crops (42)					
9. Net area under temporary crops (46)					
10. Net area irrigated (50)					
11. Net area fertilized (54)					
12. Grass land					

* Parentheses show the codes used in the Complete Enumeration, Schedule-1 of 1996 Agricultural Census

D3. Land use intensity (Source: 1996 Agricultural Census data under processing) (Schedule-2, Sample survey, Section 4, Gha)

Cropping Frequency	Area (acres)
1. Single cropland	
2. Double crop land	
3. Triple crop or more land	
4. Total area under crops	

D4. Land tenurial arrangements by crops: (Source: Thana Level Interview)

Tenurial arrangement	HYV Boro rice (% of area cultivated)	HYV Aman rice (% of area cultivated)
1. ½ - ½ output, no material input sharing		
2. ½ - ½ output, ½ -½ material input sharing		
3. 1/3 -2/3 output proportionate material input, sharing		
4. Fixed cash renting		

E. Farm Labour Data

**E1. Number of people engaged in agricultural activities
(Source: 1996 Agricultural Census data under processing)**

Type of employment	No. of males	No. of females	Total No.
1. Self-employment			
2. Assisting family			
3. Wage labour to other households			

E2. Agricultural wage rates: (Source: Thana Level Interview)

Season	Daily wage rate male (Tk.)	
	With meal (Cash + Food value)	Without meal (cash only)
1. Rabi 98/99		
2. Boro 98/99		
3. Aus' 99		
4. Aman'99		

F. INFRASTRUCTURE DATA

F1. Number of villages/Mouzas and Electricity Availability : (Source: Thana level Interview)

	Number of villages
1. Villages/Mouzas with electricity	
2. Villages/Mouzas without electricity	

F2. Roads and Communication (Source: LGED, Inventory Book).

Type of road	Length of roads (Km)			Total length
	Metal pavement	HBB/WIM	Earthen Kutcha	
1. National Highway				
2. Feeder Road				
a. Type - A				
b. Type - B				
3. R - 1				
4. R - 2				
5. R - 3				

F3. Number of road transports (Source: 1996 Agricultural Census data under processing, schedule 1, Q. 17)

Type of transport	Number of transport
1. Boat	
2. Animal cart	
3. Rickshaw	
4. Van	
5. Cycle	
6. Others.	

F4. Educational Institutions (Source: LGED Inventory)

Institution type	Number of Institutions	
	Government	Resistared
1. Primary School		
2. High School		
3. College		
4. University		
5. Mardrasha		

F5. Number of small industries and factories (Source: Thana Level Interview + LGED surveys)

Type of industries	Number of industries
1. Saw Mills	
2. Handloom/Weaving factory	
3. Brick fields	
4. Workshops with Leathe/machine	
5. Ice/Ice cream factory	
6. Bread and biscuit factory	

F6. Number of post-harvest processing units (Source : Thana Level Interview)

Type of processing Units	Number of units
1. Rice mills	
2. Flour mills	
3. Oil mills	
4. Pulses mills	
5. Spices processing units (steaming, drying etc.)	
6. Spices grinding mills	
7. Other (specify)	

F7. Cold storage Facilities (Source : Thana Level Interviews)

- a) Number of cold storages available : _____
b) Total capacity of all cold storages : _____
c) Annual actual storage volume by commodities : _____

Commodity Name	Quantity stored, 1997/98

G. MARKET DATA**G1. Number of Markets/growth centers (excluding temporary ones) and the Facilities Available: (Source: Thana Level Interview/LGED Inventory)**

Market facilities	Number of markets
1. Total Markets	
2. Markets with electricity	
3. Markets without electricity	
4. Markets with cold storage facilities	
5. Markets with godown facilities	
6. Market with welding machine/ workshop	

**G2. No. of markets (excluding temporary ones) by mode of transport:
(source: Thana Level Interview)**

Market connections	Number of markets
1. Connected by Metalled Road	
2. Connected by River Route	
3. Connected by Kutcha Road	
4. Connected by Metalled and River Route	
5. Connected by Metalled and Kutcha Road	
6. Connected by River and Kutcha Road	
7. Connected by Metalled, Kutcha Road and River Route	

H. AGRICULTURAL CREDIT DATA**H1. Distribution of agricultural credit in the thana in 1998/99. (Source: Interview with respective Bank).**

Name of Bank	No. of branches	No. of agril. Loanees	Total amount Credit distributed in 1997/98 (Tk.)			
			Crop	Livestock +Poultry	Fisheries	Equipment
Sonali Bank						
Janata Bank						
Pubali Bank						
Rupali Bank						
Agrani Bank						
BKB/RAKUB						
Grameen Bank						
PKSF						
GKF						

H2. Cooperative Loans (in 1998/99): (source: Interview with BRDB)

Type	Total Number of society	Total Members (No.)	Total amount of savings (Tk.)	Total amount of credit distributed in 1997-98
1. BRDB				
2. Cooperative Dept.				
3. RBP				

H3. NGO credit distributed in the thana (source: Interview with respective NGO, also check with Deptt. of Social Welfare, NGO Bureau).

Type of NGOs (Resistared)	Number	Total amount of credit distributed in 1997/98
1. Local NGOs		
2. National NGOs		
3. International NGOs		

H4. Non-institutional credit : (Source : Thana Level Interview)

Description of credit arrangement (max. 3)	Local terminology	Estimated annual interest rates (%)
1.		
2.		
3.		

I. FARM ANIMALS, FARM POWER & EQUIPMENT DATA**I1. Number of Livestocks: (Source: 1996 Agriculture Census, schedule-1 and Interview).**

Item	Number
1. Cows	
2. Bullocks	
3. Bulls	
4. Buffaloes	
5. Horse	
6. Sheep	
7. Goat	
8. Chicken	
9. Duck	
10. Beef &cattle production (kg)	
11. Mutton & good production (kg)	
12. Poultry production (kg)	
13. Milk production (kg)	
14. Eggs production (No.)	
15. Production of Fish by fresh water (kg)	
16. Production of Fish by marine water (kg)	

12. Land under Animal feeds :

1. Land under fodder (ha)

2. Grazing land (ha)

13. Animal feeds :

Type of feed	Quantity required	Quantity available
1. Straw		
2. Bran		
3. Poultry feed		
4. Others (specify)		

14. Irrigation Equipment: (Source: NMIDP-NMIC)

Type of equipment	Rabi season					Kharif season	
	Number in operation		Boro coverage (ha)	Wheat coverage (ha)	Other crops (ha)	Aman coverage (ha)	other crops (ha)
	Elec.	Diesel					
1. LLPs							
2. STWs							
3. DSSTW							
4. VDSSTW							
5. FMTW							
6. DTW							
7. MOPU							
8. Traditional							

15. Tillage equipment (source : Thana level Interview and 1996 Ag. Census, Schedule, Q.16)

Type of Equipment	Number in operation
1. Power Tillers	
2. Tractors	

16. Charges for irrigation (Source: Thana Level Interview)

Payment system for water	Amount per irrigation per decimal	Amount per season per decimal
5. Cash, manager's fuel (Tk.)		
6. Cash, farmer's fuel (Tk.)		
7. Share of crop (%)		

17. Farm power hire charge: (Source: Thana Level Interview)

Item	Unit	Hiring charge (Tk.)
1. Power tillers	1 Ploughing per decimal	
2. Tractors	1 Ploughing per decimal	
3. Bullock power (incl. ploughman)	1 Pair-day	
4. Area covered (ha) -----		

J. **AGRICULTURAL PRODUCTION DATA**

J1. Area and Yield of Crops (Source: DAE records, DAM and Interview):

Crops Type	1998-99		1997-98		1996-97	
	Area (ha)	Output (Kg/ha)	Area (ha)	Output (Kg/ha)	Area (ha)	Output (Kg/ha)
1. Local Aus						
2. HYV-Aus						
3. Local Boro						
4. HYV Boro						
5. Hybrid Boro						
6. Local B. Aman						
7. Local T.Aman						
8. HYV-T.Aman						
9. Hybrid Aman						
10. Jute (Deshi)						
11. Jute (Tossa)						
12. Cotton						
13. Kheshari						
14. Lentil						
15. Chickpea						
16. Mungbeen						
17. Blackgram						
18. Tobacco						
19. Mustard						
20. Soyabean						
21. Sesamy						
22. Groundnut						
23. HYV Wheat						
24. Potato						
25. Millet						
26. Sweet potato						
27. Sugarcane						
28. Maize						
29. Brinjal						
30. Banana						
31. All vegetable (major 3)						
32. Reddish						
33. Major fruits (major 3)						
34. Tea						

J2. Cereal Food situation in a normal year: (Source: Interview/record)

- The thana is generally: Put (✓)
- If food surplus, level of surplus is generally: _____ (%)
- If food deficit, level of deficit is generally : _____ (%)

J3. Number of Non-Crop Agricultural Enterprise (Source: Interview/Official record)

Type of enterprise	Number	Total stock/Area (ha)
1. Commercial Poultry Farms		
2. Commercial Dairy Farms		
3. Sweet water Fish Farms		
4. Shrimp Farms		
5. Fish Hatcheries		
6. Plant Nursery		
7. Beef fattening		
8. Floriculture farm		
9. Other (Specify)		

J4. Fisheries production : (Source: Official record/Interview)

Type of fisheries	Area (hectares)	Amount of fish produced (1000 MT)
1. Area under closed fish culture (pond)		
2. Area under open water fishing (river/beel)		
3. Area under rice-cum-fish culture		
4. Shrimp culture		

J5. Forest Production : (Source: Interview/official records)

Type of forest	Area (hectares)	Amount of forest products (1000 MT)
1. State owned:		
2. Private forestry		
3. Social/community forestry		
4. Homestead forestry		
5. Mangrove forest		

J6. Prices of non-crop agricultural enterprises : (Source : DAM/Thana Level interview)
[Prices in the month..... Year]

Non-crop enterprises	Unit of measurement	Price (Tk./Unit)
1. Poultry	Kg	
2. Milk	Kg	
3. Beef	Kg	
4. Mutton	Kg	
5. Big fish (major carps)	Kg	
6. Small fish (Tengra/Puti etc.)	Kg	
7. Shrimp	Kg	
8. Timber (Av. quality) (major)	Cft	
9. Others (Specify)		

K. AGRICULTURAL INPUT DATA

K1. Prices of fertilizers and pesticides in 1998-99 (Tk/unit) (Source: Thana Level Interview/DAM).

Input type	Unit	Prices (Tk/Unit)		
		Rabi'99	Kharif-II'98	Kharif-I'98
1. Urea	Kg			
2. TSP	Kg			
3. SSP	Kg			
4. MP	Kg			
5. DAP	Kg			
6. Sulphur/ Gypsum	Kg			
7. Zinc (Sulphate)	Kg			
8. Pesticides (Dominant in the Thana)	Packet/lb			

K2. Prices of seeds & crops in 1998-99 (Source: Thana Level Interview/DAM).

Crops	Seed type	Output
	Price (Tk/Kg)	Price (Tk/kg)
1. HYV Boro paddy 99		
2. Local Boro Paddy 99		
3. HYV Aus paddy 99		
4. HYV Aman paddy 98		
5. Local Aman 98		
6. Wheat 99		
7. Potato 99		
8. Jute 99		
9. Mustard 99		
10. Lentil 99		
11. Chickpea 99		
12. Maize		
13. Soyabean		
14. Cotton		
15. Ground nut		
16. Sesame		
17. Tobacco		
18. Sugarcane		
19. Onion		
20. Tea		
21. Major fruits in Thana		
22. Egg No.		

K3. Number of wholesaler/dealers of seeds, fertilizers, feeds etc., :
(Source: Thana Level Official record/Interview)

Item	Number of dealers
1 Fertilizer/ Pesticides	
2 Seed	
3 Feeds	
4 Power tiller/irrigation equipment	

K4. Quantity of seeds and fertilizers sold in 1998/99 (Source : Thana Level Interview)

Item	Unit of measurement	Quantity sold
1 Fertilizers		
Urea		
TSP		
SSP		
MP		
Zinc		
DAP		
2 Seeds		
Paddy HYV Aus		
HYV Aman		
HYV Boro		
Boro Hybrid		
Jute		
Wheat		
Oilseeds		
Pulses		
Maize		
Potato		
Vegetable (major 3)		
Watermelon		

L. GENDER DATA

L1. Women Participation In Agricultural Activities (Source: Thana Level Interview)

Activities	Women as % of total workers	Women workers wage (Tk/day *
1 Crop farming		
2 Vegetable farming		
3 Homestead gardening		
4 Livestock/Poultry raising		
5 Marketing of produces		
6 Rice parboiling & milling		
7 Other activities (Specify)		

*. Wages should be expressed in Taka. If food is also given, add taka equivalent with cash wage

A:GIS Ques (8.50x13.5)

APPENDIX -E

COST & RETURN QUESTIONNAIRE

Crop Year	1955		1956		1957		1958		1959		Total
	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	Jan	Feb	
1. Total cost of seed (lb.)											
2. Total cost of seed (lb.)											
3. Total cost of seed (lb.)											
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91. Total cost of seed (lb.)											
92. Total cost of seed (lb.)											
93. Total cost of seed (lb.)											
94. Total cost of seed (lb.)											
95. Total cost of seed (lb.)											
96. Total cost of seed (lb.)											
97. Total cost of seed (lb.)											
98. Total cost of seed (lb.)											
99. Total cost of seed (lb.)											
100. Total cost of seed (lb.)											

Cost and Return Data by Crops (per acre) (Source: Farmer's Interview through BS)

Input & Output	Paddy									Jute98
	LV Aus 98	HYV Aus 98	LV Boro98	HYV Boro	Hybrid Boro	LV Aman 98	LV. T. Aman 98	HYV Aman98	Hybrid Aman98	
1. Total human labour (Md/ac) ¹										
a. Total family labour (Md/ac)										
b. Total hired labour (md/ac)										
c. Daily wage rate (Tk/day) ²										
2. Total Animal labour (Pd/ac) ³										
a. Cost of animal labour (Pd/ac) ³										
3. Total power tiller cost (Tk/ac) ⁴										
4. Seeds quantity (kg/ac)										
a. Seed costs (Tk/kg)										
b. Seed costs (Tk/ac)										
5. Chemicals										
a. Urea price (Tk/kg)										
b. TSP (kg/ac) TSP price (Tk/kg)										
c. SSP (kg/ac) SSP price (Tk/kg)										
d. MP (kg/ac) MP price (Tk/kg)										
e. DAP (kg/ac) DAP price (Tk/kg)										
f. Gypsum (kg/ac) Gypsum price (Tk/kg)										
g. Zinc (kg/ac) Zinc price (Tk/kg)										
h. Pesticide costs (Tk/ac)										
6. Cowdung + Manures cost (Tk/ac)										
7. Irr. cost (Tk/ac)										
OUTPUTS										
a. Main product (Maund/ac) ⁵										
b. Harvest price of main product (Tk/maund) .										
c. Value of bi-product (Tk/ac) ⁶										

Cost and Return Data by Crops (per acre) (Source: Farmer's interview through BS)

Input & Output	Potato 99	Mustard 99	LV Boro 99	G. Nut 99	Lentil 99	HYV Sesame 99	Mung bean 99	Chick pea 99	Onion 99	Garlic 99	Maize 99	Bana- na 99	Sugar- cane 98-99	Wheat HYV wheat 99
1 Total human labour (Md/ac) ¹														
a Total family labour (Md/ac)														
b Total hired labour (md/ac)														
c Daily wage rate (Tk/day) ²														
2 Total Animal labour (Pd/ac) ⁴														
a Cost of animal labour (Pd/ac) ³														
3 Total power tiller cost (Tk/ac) ⁶														
4 Seeds quantity (kg/ac)														
a Seed costs (Tk/kg)														
b Seed costs (Tk/ac)														
5 Chemicals														
a Urea price (Tk/kg)														
f TSP (kg/ac)														
TSP price (Tk/kg)														
g SSP (kg/ac)														
SSP price (Tk/kg)														
h MP (kg/ac)														
MP price (Tk/kg)														
i DAP (kg/ac)														
DAP price (Tk/kg)														
f Gypsum (kg/ac)														
Gypsum price (Tk/kg)														
g Zinc (kg/ac)														
Zinc price (Tk/kg)														
h Pesticide costs (Tk/ac)														
a Comdung + Manures cost (Tk/ac)														
7 Irr cost (Tk/ac)														
OUTPUTS														
a Main product (Maund/ac) ⁸														
c Harvest price of main product (Tk/maund)														
d Value of bi-product (Tk/ac) ⁹														